

This document contains Chapters 3-4 of the 2002 *Kids Cook Farm-Fresh Food* prepared under the direction of the Nutrition Services Division for the California Department of Education. The entire publication is available at <http://www.cde.ca.gov/ls/nu/he/kidscook.asp>.

# apples

Although apples have been eaten in Europe and western Asia since prehistoric times, they were not domesticated until about 2,500 years ago when the ancient Greeks discovered grafting. Today apples grow in temperate climates throughout the world.

In the 1600s, the Pilgrims brought apples with them from England and established the first orchards in North America. Soon after, the colonists began fermenting the fruit for cider, which became a very popular beverage.

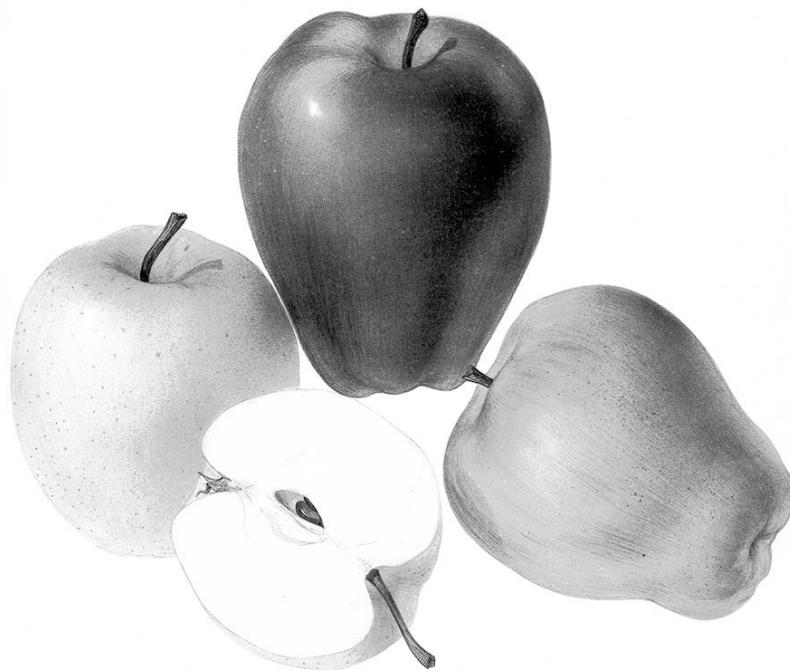
A beloved American folk hero, Johnny Appleseed, introduced the apple to the rest of the United States. Born in 1774 as John Chapman, Johnny Appleseed was a knowledgeable horticulturist and is credited with propagating apple trees throughout the country.

Apples are pomes, a class of fruit that possess seeds encased in membranous chambers sur-

rounded by fleshy fruit. Apples range from juicy, crispy varieties that are best eaten out of hand to softer types that are better for applesauce or desserts. Many people are familiar with the common red delicious, Golden delicious, Granny Smith, Pippin, and Fuji varieties of apples. Some of the lesser-known delicious eating apples include Pink Pearl, Arkansas Black, Spritzenberg, Sierra Beauty, Cox's Orange Pippin, Orleans Reinette, and Ashmead's Kernel. There are also varieties of apples that resemble wild apples called *crab apples*. They bear fruit that are small and sour. Farmers plant a few crab apple trees in their orchards to pollinate the other "eating" apples.

### Seasonality and Growing Conditions

The leading regions in apple growing are Washington state (U.S.A.) and the countries of China, Poland, Turkey, France, and Italy. There are approximately 7,000 known varieties of





apples, but only about 50 are grown commercially in the United States.

Most apple varieties are self-sterile, meaning they are unable to pollinate themselves and rely upon cross-pollination from bees. Crab apple trees are the best source of pollen for cross-pollination.

Apple trees can range from full-sized trees reaching 25 to 40 feet in height to dwarf varieties that are only four to eight feet high. On average, the trees begin producing fruit at between three and 10 years of age and can continue to do so for up to 100 years.

Apple trees prefer a temperate climate and require winter cold (chilling). The trees must be pruned every year to produce flower buds. During the spring and summer, apple trees require frequent watering. If there is enough water, apple trees can tolerate a great deal of summer heat.

### Sustainable Farming Issues

Apple trees are susceptible to many pests and diseases difficult to control. Conventional apple farming uses frequent applications of pesticides to control these problems. The popularity of organic apples increased in the 1990s after the 1989 alar contamination scare frightened consumers away from purchasing conventionally grown apples. Alar, a chemical compound used to redden apple crops, was discovered to pose a cancer risk, and its use was eventually banned on domestic apple crops. While more labor intensive, organic apple farming is viable.

Apples are prone to a number of fungal and bacterial ailments, the most common of which

are fireblight and apple scab. Fireblight, so named because the branches look as though they were burned by a fire, is a bacterial infection that enters the tree through the blossom in the springtime. It is a serious disease that can kill the tree. Conventional and organic growers generally control fireblight by cutting off affected branches.

Apple scab and other fungal diseases cause scars called *russetting* on the fruit. It is not harmful to eat russeted fruit. In sustainable agriculture it is controlled by building soil health. Using cover crops and spraying compost “tea” are ways to build soil health.

The greatest challenge for organic apple growers is the codling moth, which in conventional agriculture is controlled by frequent application of pesticides. Organic producers use beneficial insects and pheromone confusion and diligently remove wormy fruit. Codling moth worms (larvae) grow up inside the apples. They eat a hole in the apple, and mold grows where they have been. Never eat an apple that has mold in it; the mold is carcinogenic.

### Selection, Storage, and Nutrition Information

Early apple varieties tend to have tender flesh and low acid. Therefore, they last only a few weeks in storage. The shelf life for fall varieties varies. In general, apples that have dense, firm, acidic flesh can be stored longer than softer-fleshed apples and hence are dubbed the “keepers.” Apples should always be stored in a cool, dark place. Choose fruits that have firm, tight skins and that are free of wrinkles and bruises. Apples are a good source of fiber.

# Waldorf Salad

Preparation Time: 30 minutes  
 Cooking Time: None  
 Total Lesson Time: 45 minutes  
 recipe Level: easy

## Background

This recipe provides students with the opportunity to sample many different flavors in one meal. Sweet-tart apples, such as Granny Smith, Rome, Newtown, Pippin, and Gravenstein, contrast well with the sweet grapes. While students make this recipe, they can investigate the differences in flavors as well as the different parts of the plants used.

## Objectives

*Students will be able to:*

Compare the different flavors and types of crops.  
 determine which part of a plant is used for food.

## Ingredients

*For a class of 20:*

- 2 cups shelled walnuts\*
- 8 apples, large
- 2 cups red seedless grapes
- 1 head celery
- 1 cup mayonnaise
- 1 to 2 lemons, juiced

## Materials

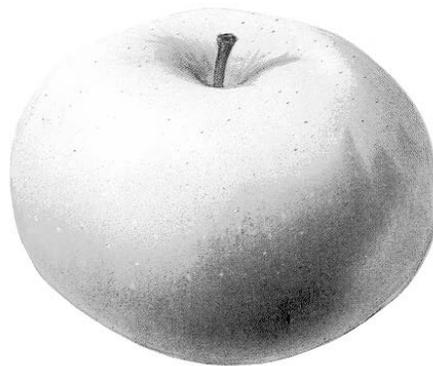
*For the class:*

- colander
- 1 large or 2 medium mixing bowls
- 2 large serving spoons
- measuring spoons
- 2 measuring cups

*For each group of 4:*

- 2 cutting boards
- 2 knives
- 1 mixing bowl
- 4 plates
- 4 forks
- 4 plates

\* Check to make sure no students are allergic to walnuts.



**Preparation**

1. Chop the walnuts, or you may buy walnuts in the shell and have the students shell the walnuts before chopping them. if you do, add nutcrackers to your materials list.
2. Wash all produce and dry it in the colander.
3. ha ve students wash their hands. discuss proper handling of food.
4. ha ve each small group share preparation responsibilities for a small part of all the ingredients in this salad. each table will need 2 apples,  $\frac{1}{2}$  cup walnuts,  $\frac{1}{2}$  cup grapes, and 1 celery stalk.

**Safety Precautions**

re view safety precautions for using knives.

**Making the Recipe**

1. determine which students in each group are going to prepare the v arious ingredients: apples, grapes, celery, and walnuts.
2. Before handing out ingredients, demonstrate to the whole class how to prepare each item. Quarter and core an apple and cut it into  $\frac{1}{2}$  inch cubes. The celery stalk should be finely sliced. The grapes should be cut in half. Chop walnuts coarsely—cut each half into fours.
3. Provide each table with materials and ingredients. one student from each pair can get the group's materials; the other can get the ingredients.
4. Circulate among the groups, helping students work.
5. ha ve students place all the prepared ingredients in their group's small mixing bowl.
6. Gather each group's ingredients into the large mixing bowl. ha ve a couple of volunteers measure the mayonnaise, lemon juice (squeeze lemons first), and hon y (if using). mix everything together.
7. serv e the salad to students and enjoy. While students are eating, ask them if they can pick out where on their tongue they taste the different fl vors of the various ingredients.
8. Clean up materials. if you have a school or classroom compost or worm bin, place the food scraps there.

# Applesauce

Preparation Time: 20 minutes  
 Cooking Time: 20 minutes  
 Total Lesson Time: 1 hour  
 recipe Level: advanced

## Background

applesauce is simple to make, and children usually love it. it can be made with several different kinds of apples. some common varieties of apples are Jonathan, Granny smith, red delicious, Golden delicious, Gala, and Fuji. if possible, pick apples of different colors to remind students that not all apples are red. students can also taste apples and find that they vary in sweetness and texture.

in this activity, students make detailed observations of the common characteristics of apples. ask students to draw and label the parts of the apple. after they have cut the apples for the sauce, ask them to discuss the function of each part of the apple. They will probably notice the skin (for protection), the fleshy part (which helps keep the seed viable and aids in seed dissemination), the seeds (for reproduction), and the stem (which attaches the apple to the tree). While waiting for the apples to cook, students can write their ideas in their journals. once the applesauce is made, students may eat it while they share ideas from their journals.

## Objectives

*Students will be able to:*

identify different varieties of apples.

state the parts of the apple.

Understand the functions of different parts of the apple.

## Ingredients

*For a class of 20:*

- 12 large apples
- water or 2 cups apple cider  
for all or part of the water
- 2 cinnamon sticks (optional)  
or 1 tablespoon cinnamon  
(optional)
- 1/3 cup sugar (optional)

## Materials

*For the class:*

- food mill, potato masher,  
or food processor
- 1 large mixing bowl
- 4-quart heavy, deep pot  
with lid
- knife or apple corer/slicer
- wooden spoon
- serving spoon
- hot plate

*For each group of 4:*

- 2 cutting boards
- 2 knives or apple  
corers/slicers
- 4 bowls
- 4 spoons
- 4 napkins
- journals

**Preparation**

1. Wash the apples with water.
2. set up the hot plate.
3. ha ve students wash their hands. discuss proper methods of handling food.
4. re view safety precautions for using knives and the hot plate.

**Safety Precautions**

hot applesauce can cause serious b urns. Use caution when stirring and blending the apple-sauce. re view safety precautions for using knives and the hot plate.

**Making the Recipe**

1. demonstrate wedging and coring apples, then cutting the wedges into se veral pieces. Point out that it is good to have pieces about the same size so that they cook evenly (about ½ inch is a good size). ha ve student pairs cut the apples. While the students cut the apples, they can make observations about the parts of the apple.
2. Place all apple pieces in the pot. add enough w ater and/or cider so that it covers about half the apples. you may add a couple of whole cinnamon sticks to the pot, if desired.
3. Put the lid on the pot and cook the apples at low heat until they are soft. you will need to stir them a few times so they cook evenly. Be careful when you take off the lid: lots of steam will come out.
4. While the apples cook for about 10 minutes, have students work in their groups drawing and labeling the parts of the apple and discussing their functions.
5. When the apples are soft, remove the cinnamon sticks. Purée the apples by using a food mill, a potato masher, or a food processor. add po wdered cinnamon and sugar, if desired.
6. serv e and eat.
7. While the students eat, ask each group to share its observations about apples with the rest of the class. Facilitate the discussion so that students understand the parts of the apple and their functions.
8. Clean up materials. if you have a school or classroom compost or worm bin, place the food scraps there.

# Apple Crisp

Preparation Time: 30 minutes  
 Cooking Time: 30 to 45 minutes  
 Total Lesson Time: 1 hour and 15 minutes  
 recipe Level: advanced

## Background

apple crisp is a simple, delicious dessert. it is best to use cooking apples. They retain their shape during cooking and have a good sweet-tart balance. Gravenstein, mcintosh, rome Beauty , or pippin are good choices. Check your foodshed\* to see what kind of apples are grown there. Walnuts or pecans could be substituted for the almonds.

This recipe works well when paired with a comparative tasting; during the baking time students can taste and investigate many different types of apples (see the section “Comparative Tasting Format”).

## Objectives

*Students will be able to:*

discuss mixtures when making the topping for the apple crisp.

Use their senses to observe different aspects of a variety of apples during comparative tasting.

record observations and write conclusions in their journals.

## Ingredients

*For a class of 20:*

- 12 medium apples
- 1 cup almonds or walnuts
- ½ cup sugar
- ¾ cup brown sugar
- 2 cups flour
- 1 cup butter, softened
- 2 tablespoons lemon juice
- 1 teaspoon cinnamon
- ½ cup water

## Materials

*For the class:*

- 1 large mixing bowl
- 1 medium mixing bowl
- colander
- baking sheet
- oven
- timer
- knife or food processor
- 2 10-inch round or 9-inch x 9-inch square baking pans or dishes
- measuring spoons
- 3 measuring cups
- 2 serving spoons

*For each group of 4:*

- 2 cutting boards
- 2 knives
- 2 vegetable peelers
- 2 mixing spoons
- 2 bowls
- 4 napkins
- 4 plates
- 4 forks
- journals

\*see glossary.

**Preparation**

1. Wash apples with water and dry in the colander.
2. Clean and set up tables.
3. ha ve students wash their hands. discuss proper methods of handling food.
4. Preheat oven to 375°F.

**Safety Precautions**

re view safety precautions for using knives and the oven. Let the crisp cool before serving as it will be very hot.

**Making the Recipe**

1. Place almonds on the baking sheet and in the oven to toast; set the timer for 7 minutes. While almonds toast, demonstrate peeling, coring, and slicing the apples (peeling the apples first is optional). Point out that apple slices should be the same thickness, about ½-inch width is good.
2. di vide the apples among the groups. ha ve students slice apples and place them in small bowls.
3. When the almonds are cool, have student groups chop almonds and place them in separate small bowls.
4. ha ve each group contribute its apples to the large mixing bowl. mix the apples with ¼ cup white sugar, the lemon juice, cinnamon, and water.
5. ask for v olunteers to measure the rest of the sugars and flour into the medium mixing bowl. mix the ingredients. ha ve other volunteers measure, cut up, and mix the butter into the flou -sugar mixture. When the mixture holds together and looks crumbly, stir in the chopped almonds.
6. ha ve some other volunteers spread the apples out in the baking pans and cover them with the topping. Place the pans in the oven at 375°F for 30 to 45 minutes until a knife can penetrate the apples easily.
7. While the apple crisp bakes, have students do the comparative tasting (see Background) using apples.
8. if possible, let the crisp cool a bit before serving as it will be very hot. allo w students to discuss, using their senses to make observations, how cooking apples change. ha ve them record their ideas in their journals.
9. Clean up materials. if you have a school or classroom compost or worm bin, place the food scraps there.

# Fooling moths – Natural Pest Control

Preparation Time: 10 minutes  
 Total Lesson Time: 30 to 40 minutes

## Background

in this activity, students learn about one organic farming technique that helps eliminate one type of pest, the codling moth. if you have eaten many apples over your lifetime, you probably have encountered a “worm” in at least one of those apples. Those things that look like worms in apples are actually the larvae of a codling moth. a *codling* is an immature apple. Codling moths afflict apples of all sizes, including codlings.

adult codling moths emit a particular scent, called a pheromone, which enables them to find each other at mating time. after the y mate, female codling moths lay their eggs on the apple, and when the eggs hatch, the larvae eat their way into the apples. These larvae are the “worms” that you find in your apple. e ntually, each larva will leave the apple, form a cocoon, and develop into an adult codling moth.

since farmers know that codling moths use pheromones to mate, farmers use this fact to prevent moths from eating and destroying their apples. Farmers set out pheromone emitters, which overwhelm the moths’ sense of smell, confusing them so they cannot find each other to mate

## Objectives

*Students will be able to:*

Understand the life cycle of codling moths and how they use pheromones.

explain ho w organic farmers can control codling moths without using pesticides.

## Materials

*For the class:*

- peppermint oil or other scent
- masking tape
- 2 healthy and 2 “wormy” apples  
(see Preparation)
- film canisters (one per student)
- cotton balls (one per student)
- apple F arm farm profil
- journals

**Preparation**

1. obtain two healthy and two “wormy” apples from a neighbor’s yard or ask at your local farmers market.
2. Place cotton balls into film canisters
3. scent two of the cotton balls with peppermint oil.
4. Place a small strip of tape on the bottom of the two scented canisters to represent mating moths.

**Doing the Activity**

1. show the fruit to students, asking for their observations about the healthy and the unhealthy fruit. Cut the fruit in half so that students can also observe the insides. have them write in their journals their observations about the fruit and ideas about why there may be differences between them.
2. read the farm profile. ask students what they understand about codling moth “worms.” if necessary, explain to them the life cycle of codling moths and how pheromones help them find mates
3. explain that students will act out how pheromone strips prevent codling moths from mating. Give out canisters to students. explain that two of the students are moths looking for their mates; they are the ones with the tape on the bottom of the film canister. have students look at the bottom of the canister but not say out loud whether they are a moth or not. have students use their noses to find their mates.
4. solicit observations from the students about what happened. (The students with the scented canisters paired up.)
5. Collect the canisters and scent all cottonballs while students write their observations in their journals.
6. Give out canisters again and have the “moths” pair up again by using only their sense of smell. since this time everyone is scented, it will probably be very difficult for the moths to find their mates
7. have students discuss the differences between the two activities. What variables changed? how did that affect the students’ ability to identify mates? how does this activity relate to what farmers do with codling moths?
8. after the discussion have students write their conclusions and supporting ideas in their journals.

# Apple Farm



**At Apple Farm in Philo, a small community in the Anderson Valley in Northern California, growing and selling apples is a family affair.**

Three generations live and work on the farm. Karen and Tim Bates bought the property in 1983 and have raised four children there. Karen's parents, Don and Sally Schmitt (who years ago founded one of California's most famous restaurants, the French Laundry in the Napa Valley), came to live on the farm several years ago. Growing and selling apples is the main focus at the farm, but the Bates family also makes and sells apple jams, jellies, and vinegars. They produce these in a big kitchen they built on their property.

Recently, they decided that a lot of people might like to make their own chutneys and jams, so they started a series of cooking classes at the farm. "The majority of the apples we sell are Golden Delicious," says Karen, "although we grow 60 different varieties." Many of the varieties the Bateses grow are ones you will never see at the supermarket, though 50 or 100 years ago those were common varieties well known in different parts of the country. Often the apple names suggest the place where they were grown originally. They have interesting names: Sierra Beauty, Splendor, Arkansas Black, and Pink Pearl, which is bright pink when cut open.

Apple Farm is located on the banks of the Navarro River. Beyond the orchards, near the river, a lot of land has been left wild, which means there are many birds and other wild animals. In the orchards, which take up 18 acres of the farm, there are about 1,800 apple trees and 200 pear trees—2,000 trees altogether.

Apple trees cannot be grown from seed because seedling trees do not resemble their parents and usually have sour fruit. Instead, growers graft a branch from a chosen variety, such as Sierra



Beauty, onto a seedling tree or to a *rootstock* variety that has been specially bred to resist soil-borne diseases or to influence the shape of the tree. It takes between five and 15 years for the tree to mature and bear fruit.

The Bateses farm organically. “We built our house out in the middle of the orchard,” says Karen, “so it’s especially important to us to not use harmful pesticides. We want our kids to be able to run out and play in the trees.”

One of an apple grower’s worst enemies is the codling moth, a tiny insect that lays eggs on the trees in spring and that can do great harm to the crop. To decrease the moth population, the Bateses hang up pheromone strips, which emit a scent that is identical to the scent of the female moth. With this scent all around them, the male moths usually cannot find the females. Of course, if the moths do not mate, there are no eggs.

You may think of wasps as a big nuisance when they swarm around your food at a picnic, but one species of wasps is an organic apple farmer’s friend. This wasp is a natural enemy of the codling larvae because it lays its eggs inside the codling moth worm. The young wasp eats the worm from the inside out. Karen and Tim purchase those particular wasps and grow lots of blooming flowers to make sure there is a healthy habitat for the wasps. The wasps are tiny and do not sting.

Karen is happy to have three generations living and working on the farm. “It takes all of us to make things work, and we each have different areas that we’re best at,” she says. Her husband, Tim, manages the orchard,

while Karen tends the garden and does the bookkeeping. Her father, Don, is in charge of building and maintenance, and her mother, Sally, oversees the cooking classes and the commercial kitchen.

The kids help out wherever they are needed—sometimes in the kitchen, sometimes in the orchard, and sometimes at the farm stand by the road where they sell apples and apple products to visitors. The children also take care of all farm animals: ducks, pigs, rabbits, horses, a cow, cats, and two dogs. “My husband and I don’t have time to take care of the animals, so my kids know that if they want animals, they have to tend to them,” Karen explains. Karen and Tim admit that they did not know a lot about farming before they bought the apple farm. Over the years they have learned through experience.



**Polly Bates, one of the four Bates children, likes picking her own ripe Golden Delicious apple.**

# Peppers

Throughout history, peppers have been a staple ingredient in the cuisine and folklore of indigenous peoples of the Americas. Peppers, like tomatoes, are members of the Capsicum and nightshade family and are native to tropical Central and South America, where they grow all year as perennials. In most of North America, including California, they are annual plants, dying after the growing season. Botanically, peppers are classified as fruits.

There are two main types of peppers, sweet and hot, as well as many in between. In general, sweet peppers have a thicker skin and milder taste and are larger than hot peppers. Popular varieties include pimiento, sweet Banana, and many varieties of the ubiquitous bell. Hot peppers or Chile peppers were introduced to Europeans by Christopher Columbus from his travels in the New World. Chile peppers are an important ingredient in the cuisines of Africa, China (Szechwan), India, Mexico, South America,

Spain, and Southeast Asia. There are hundreds of varieties of Chile peppers, most of which are indigenous to Mexico or Central America. Chile peppers can range in size from 1 inch to 12 inches in length. Most of the chemical that gives Chiles their fiery flavor is contained in the ribs and seeds of the fruit. Chiles are rated according to the Scoville scale, which ranks the intensity of their heat. The Scotch Bonnet, Chile de Arbol, and the Habanero are some of the hottest peppers according to the Scoville scale. Some Southeast Asian Chiles may be even hotter.

## Seasonality and Growing Conditions

Peppers are available year-round but are at their peak at California farms from July through October. Because they are in the same botanical family as the tomato, they like the same growing conditions. In Northern California, peppers must be started indoors because they are very sensitive to the cold. The plants require warm,





sunny conditions and must be planted in fine, loose soil with good drainage. humus (or ganic matter that is in an advanced state of decomposition) is also necessary to provide nutrients.

sweet pepper plants typically produce between four to eight fruits per plant. The fruits are picked with a 1/2-inch stem still attached. Peppers may be harvested while still green, which makes for a milder flavor in both hot and sweet varieties. red, mature peppers will have either a sweeter or a hotter flavor. Peppers are also available in a rainbow of colors, including yellow, orange, purple, and black. Chiles are often sold smoked or dried.

#### **Sustainable Farming Issues**

Peppers are not very susceptible to insect pests. Cutworms pose the biggest threat and

may be kept away from the plants by placing cardboard collars around the plant stems. mosaic, a viral infection, is a more serious worry. it causes malformed, mottled leaves and stunted plants. it is best to remove and destroy any affected plants and thoroughly wash hands and garden tools to prevent the spread of infection.

#### **Selection, Storage, and Nutrition Information**

When choosing peppers, look for ones that are shiny, smooth, firm, plump, and without wrinkles, cracks, or bruises. They should feel heavy for their size. Peppers can be stored in the refrigerator for up to two weeks. Peppers contain high-potency vitamin C and are a good source of vitamin a.

# Quesadillas with Sweet Peppers

Preparation Time: 30 minutes  
 Cooking Time: 10 minutes  
 Total Lesson Time: 1 hour  
 recipe Level: advanced

## Background

This recipe is a favorite of students. When assorted sweet peppers are used, the recipe is an excellent opportunity for students to practice learning a new vocabulary that describes tastes, textures, visual features, and smells. Use a variety of sweet peppers: California Wonder, pimiento, and yolo King are all good sweet varieties. Peppers may be eaten when they are at an immature green stage, but to really experience the different sweet flavors, you should buy or pick peppers at their ripest.

although the recipe usually uses only sweet peppers, you may wish to introduce some of the milder hot pepper varieties. some common varieties are jalapeño, serrano, and New Mexico (also known as Anaheim). Jalapeños are small (two to three inches long), smooth, and usually dark green. as they ripen, they tend to turn bright red. They are considered medium hot but will probably be too hot for most students. serranos (one to two inches) are even hotter than jalapeños. They can vary in spiciness, depending on ripeness. When they are dark green, they are milder. as they turn to red, orange, and even yellow, they become hotter and hotter. New Mexico chiles, which are medium hot, are commonly seen in the southwest hanging in *ristras* (bunches of chiles tied together).

many children prefer to eat sweet peppers raw rather than cooked. however, in traditional Mexican cooking, peppers are usually sautéed and are called *rajas*. you may want to try sautéing some of the peppers and see which ones the children prefer in their quesadillas.

## Objectives

*Students will be able to:*

identify different varieties of sweet and hot peppers.

Use new vocabulary to describe sense experiences.

Prepare peppers for cooking.

## Ingredients

*For the class:*

- 8 to 12 assorted peppers, depending on size
- 1 red or white onion (optional)
- 3 bunches cilantro
- 2 lbs Monterey Jack cheese
- 3 tablespoons olive oil
- 10 to 20 flour or corn tortillas, preferably handmade
- ½ teaspoon salt

## Materials

*For the class:*

- 1 heavy sauté pan with lid or electric skillet or griddle
- hot plate
- colander
- measuring spoons
- 4 large mixing bowls
- box grater
- oven (optional)
- knife
- cutting board

*For each group of 4:*

- 2 cutting boards
- 2 knives
- 3 bowls
- 4 napkins
- 4 plates
- journals

**Preparation**

1. Wash vegetables and dry them in the colander.
2. Clean and set up tables.
3. have students wash their hands. discuss proper methods of handling food.
4. divide the vegetables equally for the five groups.

**Safety Precautions**

review safety precautions for using knives, the hot plate, and the oven.

**Making the Recipe**

1. allow students time to examine whole peppers, make observations, and record their observations in their journals.
2. demonstrate how to cut open a pepper, wash or wipe out the seeds, and cut up the flesh into thin strips. also show how to peel the onion, cut it in half, and hold the cut side on the cutting board as you dice the onion.
3. divide the peppers, onions, and cilantro among the groups for chopping and placing in separate bowls. as they chop, students can discuss and share descriptive words with others in their group.
4. have one group grate the cheese.
5. Gather all the cilantro into one mixing bowl, all the peppers into another bowl, and all the onions into another bowl. separate any hot peppers and place in their own small bowl.
6. Gather students around the demonstration table to watch the cooking. Toss peppers with the oil and salt.
7. heat a large, heavy pan over medium heat and add a tortilla. Flip over the tortilla when it begins to get crispy, and sprinkle on it some grated cheese, peppers, cilantro, and (optional) onion.
8. remove the quesadilla and place it in a warm oven to hold until all are made. if you like, you can fold the quesadilla in half with the filling in the inside
9. While you cook the other quesadillas, have students return to their seats and plan using descriptive words to tell a story about a delicious eating experience.
10. Cut each quesadilla in half and serve on small paper plates. While students eat, have them record their taste sensations by using descriptive words. have the class share story ideas and begin writing the stories.
11. Clean up materials. if you have a school or classroom compost or worm bin, place the food scraps there.

# Bulgur Salad with Red Peppers, Cucumbers, & Cheese

Preparation Time: 30 minutes  
 Cooking Time: 30 minutes  
 Total Lesson Time: 1 hour and 15 minutes  
 recipe Level: advanced

## Background

This Moroccan salad is a staple for the people of the Atlas Mountains in northern Africa. It is a wonderful lesson in which to discuss ethnic foods and foods grown in specific regions throughout the world. The recipe is a bit time-consuming, but it allows students to experience several facets of cooking: preparing the vegetables, roasting the peppers, observing the bulgur absorb the water, and mixing the ingredients together into a salad.

## Objectives

*Students will be able to:*

observe, demonstrate, and name the different facets of the cooking process (preparing, roasting, absorbing, and mixing).

Understand the functions of different tools for cooking.

## Ingredients

*For a class of 20:*

- 6 red bell peppers
- 3 cups bulgur
- 5 cups water
- 2 bunches scallions
- 3 cucumbers
- 3 garlic cloves (2 if large)
- 6 tablespoons chopped mint
- 6 tablespoons chopped cilantro
- 3 cups feta cheese, crumbled
- 9 tablespoons lemon juice
- salt and pepper
- $\frac{3}{4}$  cup olive oil

## Materials

*For the class:*

- 1 large mixing bowl
- hot plate
- colander
- measuring spoons
- 2-quart pot
- oven

*For each group of 4:*

- 2 cutting boards
- 2 knives
- 2 bowls
- 4 napkins
- 4 forks
- 4 plates
- journals

**Preparation**

1. Wash vegetables and dry them in the colander.
2. ha ve students wash their hands. discuss proper methods of handling food.
3. Preheat the oven to 400°F and put water on the hot plate to boil.

**Safety Precautions**

re view safety precautions for using knives, the hot plate, and the oven.

**Making the Recipe**

1. Place the peppers in the preheated oven for 20 minutes and roast them until skins are blistering.
2. Place the bulgur in a bowl and add the boiling water. Keep the bulgur covered for 20 minutes.
3. demonstrate ho w to chop scallions, cucumbers, garlic, mint, and cilantro. Provide each group with a portion of these ingredients to prepare.
4. ha ve groups prepare the ingredients and place them into separate bowls.
5. ha ve one group crumble the cheese.
6. When the peppers are ready, give students time to examine the whole roasted peppers. Peel off the skin and then cut the peppers into ¼-inch strips.
7. in a small bowl, mix the lemon juice with 1½ teaspoons salt and ¼ teaspoon pepper, then stir in the olive oil. Now add and stir in the chopped herbs.
8. sho w students the bulgur, pointing out how it absorbed the water. stir the oil mixture into the bulgur and add the chopped vegetables. stir and taste for salt and pepper seasoning. add crumbled cheese and serv e on small paper plates.
9. While students eat, review with them the different tasks involved in the cooking process.
10. Clean up materials. if you have a school or classroom compost or worm bin, place the food scraps there.

# making a harvest Garland

Preparation Time: 20 minutes  
 Total Lesson Time: 50 to 60 minutes, plus  
 10 to 15 minutes at least  
 one week later

## Background

in the southwestern United States, people string fresh chiles and hang them to dry. These beautiful strings of peppers, called *ristras*, are used both for cooking and for decoration. In this activity, students string a variety of plant materials into a garland to take home for a lovely fall harvest decoration.

You can get free or inexpensive materials for making garlands from a number of sources: your school garden, students' yards or kitchens, or your local farmers market (ask for leftover produce that would be appropriate for drying).

## Objectives

*Students will be able to:*

observe the changes of the chiles and other plant materials as they dry.

Produce a garland for home decoration.

## Materials

*For the class:*

assorted chiles  
 an assortment of other plant materials  
 for stringing: indian corn (red, blue,  
 and other colors); popped popcorn;  
 cranberries; tiny pumpkins; seed pods;  
 decorative leaves, such as maple or  
 eucalyptus; decorative fruits, such as  
 pyracantha or toyon; apple or Fuyu  
 persimmon slices; small pomegranates;  
 garlic bulbs; and marigolds, cosmos,  
 or other small flowers  
 heavy thread  
 newspaper

*For each group of 4:*

4 copies of Tierra Vegetables farm  
 profile (optional)  
 4 large embroidery needles  
 4 plastic bags  
 journals

**Preparation**

1. Clear an area near a sunny window where you will be able to hang garlands for about one week to dry in the sun.
2. if using dried indian corn to make the garland, soak the corn overnight so that it is soft enough for students to string.
3. Cut heavy thread into three- to four-foot lengths, one per student.
4. Clean and set up tables. Cover the tables with newspaper.

**Doing the Activity**

1. ask students if they have ever seen dried fruits or vegetables; ask them how drying helps prolong the useful life of produce.
2. (optional) have students read the Tierra Vegetables farm profile. discuss how drying and smoking the chiles helps Lee and Wayne sustain their farm during the months when they cannot sell fresh peppers.
3. Give each group of students two different chiles to observe. ask them to draw the chiles in their journals and to write observations about their texture, smell, and color.
4. Give each student a length of thread and a needle. demonstrate how to thread the needle and to tie off the end. show students the assorted materials from which they will create their garlands. Point out that apple or Fuyu persimmon slices should be strung with the thread running parallel to the flat side; this will allow the slices to dry more quickly. it is also a good idea to tie a knot in between fresh (and dried) materials to space them apart so that mold will not form. When stringing chile peppers, students should *tie* the thread around the stem and *not* use the needle (avoid contamination by the burning chemical). make sure that students wash hands carefully after handling chiles.
5. allow time for students to create their garlands. if possible, encourage each student to include at least one chile in the garland.
6. hang the garlands horizontally in a sunny window for a week or more to dry.

**Day Two (At least one week later)**

1. have students make observations of the dried chiles, draw a picture in their journals, and write observations about texture, smell, and color. Compare observations of the fresh and dried chiles. also discuss observations about how the other plant materials have changed.
2. Provide plastic bags for students to take their garlands home to enjoy with their families.

# Tierra Vegetables

## How many different kinds of peppers can you think of?

Chances are farmer Lee James can think of more. On their farm, Tierra Vegetables, in Healdsburg, Lee and her brother Wayne grow 70 different varieties of sweet and hot peppers in a wide range of shapes, sizes, colors, and flavors. Most people would consider 70 to be a large number, but Lee says it is only a fraction of the number of pepper varieties out there: people in countries all over the world grow literally thousands of different kinds of peppers.

Peppers are divided into two main types: sweet and hot. Sweet peppers have no heat, just a pleasant, mild taste. Hot peppers are also called chiles. “Hot peppers can have a little or a lot of heat,” Lee explains. “The hotness comes from a clear liquid chemical held in blisters in the pepper’s pith, the white fiber where the seeds are found.” That is why you can reduce the heat of even very hot peppers by removing the seeds and the fibrous pith.

The outside of a hot pepper is not hot. “You can take the whole pepper and put it in your mouth,” says Lee. But once you cut into it and break the blisters, watch out! Some peppers are so hot you should wear rubber gloves when you cut them up, or you can actually get blistering burns on your hands. And you certainly would not want to put a cut-up hot pepper straight into your mouth. Hot peppers need to be mixed with a lot of other food before they are edible.

Chile de arbol and habaero chiles are two of the hotter varieties. Lee explains that a long spell of hot weather will make these peppers even hotter.

At Lee’s and Wayne’s farm, the peppers begin their lives in trays in the greenhouse, where seeds are planted in March. From there, the tiny plants are transplanted to six-pack containers. When the plants are big and strong enough, they are planted in the field, usually in May or June. Lee plants the peppers from the back of a tractor her brother drives around the field. The peppers ripen in the summer heat and are ready to be picked from July through October.

Starting in October, Lee and Wayne dry and smoke their peppers to sell at farmers markets during the winter. To smoke the chiles, Wayne built a special smoker—a big box with trays stacked in it and a wood-burning fire underneath. The smoked chiles are called *chipotles*, which is an Aztec word meaning *chile* and *smoke*. Chipotles are used in Latin American cooking. Lee and Wayne sell their peppers throughout the San Francisco Bay area, at farmers markets. “We sell at markets on Saturdays and Sundays,” says Lee. “Sometimes I think it would be nice to take a day off and maybe not work the Sunday market, but then we’d have a lot of disappointed chile eaters on our hands.”



**Lee James plants the peppers from the back of a tractor her brother Wayne drives around the field on their farm, Tierra Vegetables.**