

# Garden Enhanced Nutrition Education Workshop Materials Fall 2012

Created in Partnership with

LifeLab Science Program

Resource Conservation District of Greater San Diego County

School Gardening Program at the Agricultural Sustainability Institute at UC Davis

# Comparative Tastings

## **Overview**

Comparative taste tests provide an engaging, multi-sensory opportunity to encourage young people to try new fruits and vegetables. By asking for students' opinions, we demonstrate interest in and respect for their preferences. Students, in return, will often become less reluctant to try something new when given the opportunity to weigh in with an opinion. Some schools conduct voting booths at Health Fairs, with each visitor voting for their favorite variety of winter squash, for example. Other schools use students' responses to comparative taste tests to determine school lunch menu items. Whatever the scale or purpose of your taste test, this is a tried-and-true method for inspiring curiosity and courage to try new things.

## **Demonstration Lesson**

"Rate the Taste" from Champions for Change Children's Power Play! Campaign's "4th Grade School Idea and Resource Kit," pages 57-64.

## **Logistics**

*Time required:* 50 minutes

*Location:* Indoor or outdoor

*Materials List\**

- Hand soap
- 1 copy of the "Rate the Taste" worksheet for each student (available in English and Spanish)
- Taste testing supplies, such as serving container (two 4-ounce cups or plates per student), napkins, tasting forks and/or spoons
- Cup of water for each student
- Cleaning supplies, such as sponges, detergent, etc.
- A variety of fruits and vegetables for tasting
- Thesaurus

*\*(Summarized from the Demonstration Lesson. Refer to the original for a complete materials list.)*

## **Free online lessons about Comparative Tastings**

**Grow It, Try It, Like It! Preschool Fun with Fruits and Vegetables**, “Growing Great Tasters: Strategies for Food Tasting” pages 17 and 44. This preschool guide offers tips to increase the positive impact of taste tests with preschoolers and a guide for teaching preschoolers to be polite when they do not want to finish something they have tried.

<http://teammnutrition.usda.gov/Resources/growit.html>

**Harvest of the Month** On the Harvest of the Month website, you can find comparative tasting suggestions, background information, recipes, and other classroom and home activity ideas for each of 36 different fruits and vegetables, organized by the seasons in which each crop is available.

<http://www.harvestofthemoth.cdpd.ca.gov>

**Cooking with Kids, Inc.**, “Free Tasting Lessons.” This bilingual resource includes downloadable tasting activity guides for apples, citrus, dried fruit, grapes and raisins, melons, peas, pears, root vegetables, salads, and tomatoes. Each crop includes a unique guide for Grades K-1, 2-3, and 4-6.

<http://cookingwithkids.net>

**Cornell’s Seed to Salad Project**, “Seed to Salad: Variety Taste Test.” This activity includes an open-ended taste test chart, in which students create a scale, such as “Yum to Ick.”

<http://blogs.cornell.edu/garden/get-activities/signature-projects/seed-to-salad>

**Harvesting Health**, “You Be the Food Critic: Fifth Grade – School Ideas and Resource Kit,” Appendix 7, page 57. This guide includes a list of fruit and vegetable options that work well for taste test, a lesson write up for conducting a taste test, and a visual handout for students in both English and Spanish.

<http://www.northcoastnutrition.org/garden-based-nutrition-education>

**The Great Garden Detective Adventure**, “Use Your Five Senses,” page 17. This lesson connects taste testing with an overview of the six plant parts. It includes a Garden Detectives’ Tasting Code with tips for polite taste testing. It also includes a handout that asks students to use each of their five senses when exploring and describing their fruit or vegetable.

Coming soon from Team Nutrition, <http://www.fns.usda.gov/tn/>

Life Lab’s **Plant It, Grow It, Eat It!** workshop series, “Taste the Difference” lesson. This comparative tasting activity combines a nutrition tasting and descriptive language with music and performing arts. Students use the words they brainstormed to create skits for the class.

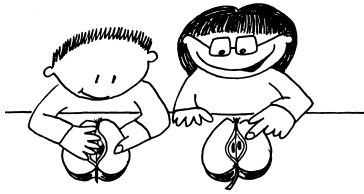
<http://www.lifelab.org/pigiei/#tastetest>

## Free online resources that support teaching about Comparative Tastings

***Kids Cook Farm Fresh Food***, “Comparative Tasting Format,” page xviii. This provides a comprehensive overview of the objectives, materials, preparation, safety precautions, and steps for running an effective taste test. In this sample, the students themselves cut the produce, a method that can work well in upper elementary, middle, or high school. <http://www.cde.ca.gov/ls/nu/he/documents/kidscookcomplete.pdf>

### ***Food for Thought***

- Can you see doing these lessons with your students?
- How might you modify it to fit your student population?
- How might this connect with other subjects you teach?
- How might you further connect these activities to the garden? To edible activities? To nutrition?



## Taste the Difference

### Description:

Students use all of their senses to identify subtle differences between four varieties of the same fruit or vegetable. They then describe each sample, and finally work together to perform a poem or other creative presentation for the class.

### Materials:

- Hand soap
- 4 varieties of apples, such as Golden Delicious, Fuji, Granny Smith, and Mutsu.  
There should be enough produce for each student to have a sample of each variety. (Tip: This activity also works with other fruits or vegetables)
- 1 large kitchen knife (for the teacher) or 4 apple corers (for students)
- 4 cutting boards
- 4 paper lunch bags
- 120 slips of scrap paper
- 4 large pieces of chart or construction paper
- Toothpicks
- *Optional:* Bell
- *Optional:* Percussion instruments

### Preparation:

1. Wash and prepare all apples for sampling. For older students, you can just place all of the washed apples of one variety onto a cutting board with an apple corer. For younger students, wash and slice each apple into enough samples for each student. Then place each variety onto a separate cutting board, and place toothpicks into each slice for easy handling.
2. Create four labels, one for each apple variety.
3. Set up four stations in the classroom or outdoors. At each station place one cutting board with samples of one apple variety, a label stating the variety name, one lunch bag, 30 strips of scrap paper, four pencils, and one large sheet of paper. Make sure it is easy for a quarter of the class to gather around one station at a time.
4. Place hand soap near sink.

### Class Discussion:

*Look at this apple. Which senses can you use to learn more about it? Sight? Smell? Touch? Taste? What are some words you could use to describe an apple? Create a word bank with their answers and post it somewhere they can look during the taste test to get ideas. In*

*this lesson there are four stations with four different types of apples; you will spend a few minutes at each station. If relevant at this point, demonstrate how to use an apple corer. Each of you will examine very closely one slice of apple at each station. Be sure to notice the colors on the inside and outside and the smell. Then taste your apple slice, and notice the flavor and texture (that's the way it feels) inside your mouth. Finally, each of you will choose a word to describe the apple at the station, write the word on a strip of paper, and put the paper in the lunch bag. Demonstrate the process. When you hear me ring this bell, rotate clockwise to the next station. Again, demonstrate.*

**Action:**

1. Discuss or review safe food handling. Highlight and demonstrate how to wash hands thoroughly and how to take a sample without touching any of the other samples on the plate.
2. Have all students wash their hands.
3. Divide the class into four groups. Each group will spend a few minutes at each apple station, exploring and tasting each sample. Suggest that they use all of their senses to observe what makes that apple variety unique.
4. At each station, ask each student to write on a strip of paper one descriptive word about the sample and place it in the bag.
5. After the groups have been to all stations, have them return to the station where they started and open the bag of words. Have each group use all the words to compose a poem about that apple variety. Ask them to copy it onto the large sheet of paper. Each word must be used once; if the same word appears three times, it must be used three times. Encourage creativity; students can act out their poem, turn it into a song, or even choreograph it as a dance. They can choose the order of the words, the rhythm, and whether or not to include gestures, percussion instruments, audience participation, or hand clapping. Have the students title their poems.
6. Have each group present their poem to the class. After each one, the class can try to guess which apple variety that group had.
7. Post the poems and attach the apple variety name to each one.

**Digging Deeper:**

Which apple was the most sweet? Tart? Crunchy? Juicy? Compare two apples that seemed very different from each other. Compare the two apples that seemed the most similar.

In the fall, visit an apple orchard to see apples growing on trees, or visit a farmers' market to meet an apple farmer and taste even more varieties of apples.

**California Health Standards:**

- 7.1.N. Select nutritious snacks.
- 1.6.G. Name and describe the five sense.
- 1.6.N. Describe how to keep food safe from harmful germs.

## LEARNING OBJECTIVES

After completing this activity, students will be able to:

- Identify characteristics of fruits and vegetables that they find appealing.
- Name at least one fruit or vegetable that they would like to eat again in the future.
- Use adjectives to describe the characteristics of at least 3 fruits and vegetables.

## LINKS TO CONTENT STANDARDS

- Word Analysis, Fluency and Systematic Vocabulary Development 1.0
- Writing Applications (Genres and Their Characteristics) 2.0
- Nutrition and Physical Activity 1.0, 4.0, 7.0

### READY

Students sample an array of fruits and/or vegetables, one at a time, using safe food handling techniques. After each sample is tasted, each student rates the food and then uses adjectives to describe the food. Lastly, students write a one-paragraph description of the fruit or vegetable they liked best using the adjectives that they used to describe it.

### SET

- Review the Activity Notes.
- Review Rate the Taste, Worksheet 7.
- Prepare fruits and vegetables for tasting by peeling and cutting into bite-sized pieces close to serving time, so that they stay fresh. Follow Safe Food Handling Techniques (see Activity Notes). You may want to work with your school food service department to prepare the samples for tasting.
- If students are tasting both fruits and vegetables, prepare one cup or plate of vegetables and one cup or plate of fruits for each student.
- Have cups and water available for students to drink while tasting.
- Be sure students have access to soap, water, and paper towels to wash their hands before eating. As an alternative, provide each student with a cleansing wipe.
- Ask your school child nutrition director to attend the taste testing so that she/he may learn about the students' fruit and vegetable preferences.

# Rate the Taste



### TIME

- Prep — 20 minutes (may vary)
- Activity — 50 minutes

### MATERIALS

- Student workbooks
- Taste testing supplies, such as serving containers (two 4-ounce cups or plates per student), napkins, tasting forks and/or spoons
- Cup of water for each student
- Cleaning supplies, such as sponges, detergent, etc.
- A variety of fruits and vegetables for tasting, including fresh, frozen, canned, or dried products. Obtain these from your school child nutrition department or call your local grocer or farmers' market to request a produce donation (see Appendix for a sample donation request letter).
- Thesaurus

**Caution:** Whenever you are serving food to students, you should check for food allergies.



# Rate the Taste

## GO

### 1. Introduce the activity.

- Introduce the concept of variety to students.  
Ask them:
  - Do you eat many different kinds of food each day?
  - Do you eat many different fruits and vegetables each day?
  - Do you like to try new fruits or vegetables? Why or why not?
  - Is it important to eat different fruits and vegetables? Why?
- Explain to students that in this activity they will taste several different fruits and vegetables. They may get to taste some fruits or vegetables they haven't tried before.

### 2. Brainstorm words to describe fruits and vegetables.

- As a class, review the definition of an adjective and brainstorm adjectives that may be used to describe the fruits and vegetables they taste. (*Examples may include how they taste, look, smell, or their texture: sweet, sour, juicy, tart, crisp, crunchy, mushy, tangy, bitter, ripe.*) Write the adjectives on the board.

### 3. Introduce the food tasting activity.

- Have students wash their hands with soap and water and clean the areas in which they will taste the food.
- Talk with your students about the steps you took to make sure the food they are tasting is safe to eat. Explain that the fresh fruits and vegetables were washed with water, even those that are peeled, and the tops of the canned items were washed before they were opened.
- Set some ground rules for your tasting activity. Ask students not to make any negative comments or faces if they taste something they don't like. Give them permission to quietly and politely remove food from their mouths into a napkin. This encourages children to try new foods without fear.
- Have students turn to Rate the Taste, Worksheet 7 in their workbooks. Review the directions at the top of the worksheet.
- Explain that students cannot use the same adjective over and over to describe the foods, but will need to come up with different adjectives.

- If you have a thesaurus available, point it out as a resource the students can use.
- Tell the students which fruits and vegetables they will taste today.
- Distribute one cup/plate of vegetables and one cup/plate of fruits to each student.
- Distribute one cup of water to each student.
- Allow 20 minutes for students to taste the items and fill out the Rate the Taste worksheet.

### 4. Review the results.

- Lead a class discussion about the students' experiences.
  - Did you try a fruit or vegetable you had never tasted before?
  - Were you surprised by the way it tasted?
  - Will you eat this fruit or vegetable more often in the future? Why or why not?
  - Do you usually have fruits and vegetables that you like at home?
  - Will you ask your parents to buy any of the fruits and vegetables that we tasted today? Why or why not?
  - What did we do to make sure that the food we tasted today was safe to eat?
- Ask students to write a one-paragraph description of the fruit or vegetable they liked best, using as many adjectives as they can to describe its taste, smell, and texture.

## GO FARTHER

- Were there certain fruits or vegetables that students particularly enjoyed? Have students write a letter to the child nutrition director to ask that these foods be added to the school menu.
- Invite a school child nutrition staff member, chef, or a high school culinary arts class to conduct a food preparation demonstration for your class.
- If your school has a garden, conduct a tasting with fresh fruits and vegetables from the garden.
- Encourage the students to take their rating sheets home to share with their families. If you prepared a recipe, make copies available for those children that want to try making it at home.





# Activity Notes: Rate the Taste

**Try to conduct the tasting using fruits and vegetables that will be new to your students. The activity will be more exciting if there are new and colorful options such as:**

- Artichokes
- Avocados
- Asparagus
- Bok choy
- Cantaloupe
- Dried fruit (dried peaches or dried apricots)
- Eggplant
- Figs
- Grapefruit
- Melon (cantaloupe, honeydew)
- Jicama
- Kiwifruit
- Kumquats
- Lychee
- Mango
- Red cabbage
- Papaya
- Passion fruit
- Pears
- Persimmon
- Quince
- Radishes
- Bell peppers (red, green, and yellow)
- Rhubarb
- Rutabaga
- Squash (spaghetti, summer, and winter)
- Sugar snap peas
- Sweet potatoes
- Tamarind
- Water chestnuts
- Watermelon
- Zucchini

**You have several options for the taste test:**

- Taste the same fruit or vegetable prepared several different ways (e.g., a steamed/microwaved vegetable and a raw vegetable)
- Taste many different types of a fruit or vegetable (e.g., samples of green peppers, red peppers, and yellow peppers, or different varieties of apples)
- Provide different dips for fruits and vegetables (e.g., lowfat salad dressing with vegetables and lowfat yogurt with fruits)

- Taste fruits and vegetables that are all the same color (e.g., green: avocados, kiwifruit, peas, broccoli, etc.)

Be sure to check with your school child nutrition department ahead of time to request food tasting samples.

To keep the cost down, purchase fruits and vegetables that are in season.



# Safe Food Handling Techniques

## General Food Safety

There are four simple keys to making sure that your food is safe from harmful bacteria:

- *Clean:* Always wash your hands, utensils, and surfaces with hot, soapy water before and after preparing food.
- *Separate:* Keep raw meat, poultry, and seafood separate from other foods when they are stored and when you are preparing them.
- *Cook:* Be sure to cook food for a long enough time and at a high enough temperature to kill harmful bacteria.
- *Chill:* Put prepared foods and leftovers into the refrigerator or freezer as soon as possible. Don't defrost foods at room temperature – thaw them in the refrigerator, under cold running water, or in the microwave.

## Fruit and Vegetable Safety

- Rinse all fruits and vegetables with water, even if you don't eat the outside of the fruit or vegetable (such as bananas, cantaloupe, or oranges). If necessary, use a small vegetable brush to remove surface dirt. Before opening them, rinse the tops of the cans when using canned fruits and vegetables.
- Try to cut away damaged or bruised areas of fruits and vegetables.
- Use juices that have been pasteurized or treated to kill harmful bacteria. Pasteurized juices can be found in refrigerated sections of stores. Treated juices can be kept on the shelf in stores and are in juice boxes, bottles, and cans. Unpasteurized or untreated juice should have a warning label that says, "This product has not been pasteurized and therefore may contain harmful bacteria that can cause serious illness in children, the elderly, and persons with weakened immune systems."

## Cooking Safety

- Always use clean, dry oven mitts whenever you use the oven.
- When cooking on the stove, make sure pot handles are turned away from the front of the stove so the pots are not accidentally bumped or knocked off.
- When uncovering a pot on the stove or a container from the microwave, open the lid away from you to let the steam out.
- Always turn the sharp edge of a knife or vegetable peeler away from you as you use it (use caution when handling a cheese grater, too). Keep your finger tips away from the sharp edge of the knife when cutting.
- Use a cutting board when you chop or slice ingredients.
- When using a blender, keep the lid on. Turn the blender off before you put any utensils inside the blender container.

**For more information on food safety, visit [www.foodsafety.gov](http://www.foodsafety.gov).**



# Rate the Taste

Did you like the fruits and vegetables that you tasted? Write adjectives to describe how the food tasted, looked, smelled, and felt. Do not use the same adjective more than two times. Then circle or color the picture that shows how much you liked each food. When you are done, write a paragraph about your favorite fruit or vegetable. Use the adjectives to describe how it tasted, looked, smelled, and felt.

## Sample 1

Name of this food: \_\_\_\_\_

Adjectives for this food: \_\_\_\_\_

\_\_\_\_\_



## Sample 2

Name of this food: \_\_\_\_\_

Adjectives for this food: \_\_\_\_\_

\_\_\_\_\_



## Sample 3

Name of this food: \_\_\_\_\_

Adjectives for this food: \_\_\_\_\_

\_\_\_\_\_



**Sample 4**

Name of this food: \_\_\_\_\_

Adjectives for this food: \_\_\_\_\_

\_\_\_\_\_



**Sample 5**

Name of this food: \_\_\_\_\_

Adjectives for this food: \_\_\_\_\_

\_\_\_\_\_



**Sample 6**

Name of this food: \_\_\_\_\_

Adjectives for this food: \_\_\_\_\_

\_\_\_\_\_



**My favorite fruit or vegetable:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# Califica el Sabor

¿Te gustan las frutas y los vegetales que has probado? Escribe los adjetivos que describen como saben, como se ven, como huelen y como se sienten. No uses el mismo adjetivo más de dos veces. Luego encierra en un círculo o pinta el dibujo que describa cuánto te gustó cada alimento. Cuando has terminado, escribe un párrafo sobre tu fruta o vegetal favorito. Usa los adjetivos para describir cómo te supo, cómo se veía, cómo olía y cómo se sentía.

## Muestra 1

Nombre de este alimento: \_\_\_\_\_

Adjetivos para este alimento: \_\_\_\_\_



## Muestra 2

Nombre de este alimento: \_\_\_\_\_

Adjetivos para este alimento: \_\_\_\_\_



## Muestra 3

Nombre de este alimento: \_\_\_\_\_

Adjetivos para este alimento: \_\_\_\_\_



**Muestra 4**

Nombre de este alimento: \_\_\_\_\_

Adjetivos para este alimento: \_\_\_\_\_

\_\_\_\_\_



**Muestra 5**

Nombre de este alimento: \_\_\_\_\_

Adjetivos para este alimento: \_\_\_\_\_

\_\_\_\_\_



**Muestra 6**

Nombre de este alimento: \_\_\_\_\_

Adjetivos para este alimento: \_\_\_\_\_

\_\_\_\_\_



**Mi fruta o vegetal favorito:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Common Core Standards Frequently Used In Cooking and Tasting Activities

### Math:

K.CC.4: Understand the relationship between numbers and quantities; connect counting to cardinality.

K.CC.5: Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

K.CC.6: Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. (Groups with up to 10 objects)

K.OA.1: Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

K.OA.2: Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

K.MD.1: Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

2.MD.10: Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

3.NF.1: Understand a fraction  $1/b$  as the quantity formed by 1 part when a whole is partitioned into  $b$  equal parts; understand a fraction  $a/b$  as the quantity formed by  $a$  parts of size  $1/b$ .

3.MD.2: Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

5.MD.1: Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05m), and use these conversions in solving multi-step, real world problems.

## Language Arts

- K.RL.5 Actively engage in group reading activities with purpose and understanding.
- K.W.3 Use a combination of drawing, dictating, and writing to narrate a single event or several loosely linked events, tell about the events in the order in which they occurred, and provide a reaction to what happened.
- K.L.5.a Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent.
- K.L.5.c Identify real-life connections between words and their use (e.g., note places at school that are colorful).
- I.RF.4.a Read on-level text with purpose and understanding.
- I.L.5.c Identify real-life connections between words and their use (e.g., note places at home that are cozy).
- I.W.3 Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure.
- 2.L.5.d Distinguish shades of meaning among verbs differing in manner (e.g., look, peek, glance, stare, glare, scowl) and adjectives differing in intensity (e.g., large, gigantic) by defining or choosing them or by acting out the meanings.
- 2.SL.1 Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
- 2.L.5.a Identify real-life connections between words and their use (e.g., describe foods that are spicy or juicy).
- 2.L.5.b Distinguish shades of meaning among closely related verbs (e.g., toss, throw, hurl) and closely related adjectives (e.g., thin, slender, skinny, scrawny).
- 3.SL.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
- 4.RF.4.a Read on-level text with purpose and understanding.
- 4.SL.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher- led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
- 5.SL.1 Engage effectively in a range of collaborative discussions (one-on-one, in



groups, and teacher- led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

# Cooking with Kids

## **Overview**

Cooking with kids empowers children to prepare their own healthy snacks and make their own nutritional choices. It gives them a chance to see others enjoying healthy food, and provides time to discuss nutrition concepts and what makes some food or food prep techniques healthier than others. Furthermore, cooking and eating is a wonderful way to explore different cultures and their flavorful cuisines and customs.

In this section you will learn practical tips for cooking activities with children, and create a simple dish to share with the class. Organization and set-up is key! In addition, hands should be kept busy - everyone is assigned a task for food preparation and clean-up.

## **Demonstration Lessons**

“Bulgur Salad with Red Peppers, Cucumbers and Cheese” from ***Kids Cook Farm Fresh Food***, p 42

## **Logistics**

*Time required:* About 45 minutes

*Location:* In the classroom or teaching kitchen

*Materials List\**

### Knife Safety Lesson

- cutting board
- kitchen knife
- fresh fruit or veggie for slicing
- chart paper and markers

### Bulgur Salad

- See lesson for full materials list.
- Cooking Station Task Cards
- Clean Up Cards

*\*Summarized from the Demonstration Lesson. Refer to the original for a complete materials list.*

## Free Online Resources that Support Teaching about Cooking with Kids

***Kids Cook Farm Fresh Food***, “Cooking Equipment” from page xx. Comprehensive shopping list of equipment for classroom food preparation. (Grades 2-7)  
<http://www.cde.ca.gov/ls/nu/he/documents/kidscookcomplete.pdf>

***Harvesting Health***, North Coast Collaborative “Cooking Activity Methods.” Appendix 2 and “Sequential Nutrition Education Opportunities for Children” Appendix 1. (All grade levels)  
<http://www.northcoastnutrition.org/garden-based-nutrition-education>

***Grow It, Try It, Like It!*** - Hand Washing and Polite Food Tasting Instructions on page 43 of The Basics manual. This teaches students how to taste something new in an appropriate manner. (Preschool)  
<http://teammnutrition.usda.gov/Resources/growit.html>

**“Cooking Box Supply List”** Content suggestions from Gault Elementary School in Santa Cruz. (All grade levels)  
<http://www.healthyschoolenvironment.org/training-resources/nutrition-education>

## Recipe Resources (All grade levels)

***Cooking with California Food*** Internationally flavored recipes using seasonal produce. <http://www.ecoliteracy.org/cooking-with-california-food>

***Kids Cook Farm Fresh Food*** Activities; recipes featuring fresh produce; farmer profiles; and more in this free, downloadable curriculum for grades 4-8. Connected to CA content standards.  
<http://www.cde.ca.gov/ls/nu/he/documents/kidscookcomplete.pdf>

**Got Veggies?** “Cooking and Eating in the Garden,” pp 48-55.

**Garden Recipes from Life Lab's Programs** [www.lifelab.org/2012/08/garden-recipes](http://www.lifelab.org/2012/08/garden-recipes)

## Good Knives for Student Use

### Early Elementary

[www.montessoriservices.com](http://www.montessoriservices.com) – Wavy Chopper and others  
[www.curiouschef.com](http://www.curiouschef.com) - Curious Chef Knife

### Upper Elementary

[www.ablekitchen.com](http://www.ablekitchen.com) - Search for “rounded steak knives”

## ***Food for Thought***

- Can you envision preparing this recipe with your students? How might you modify it to fit your student population?
- How might you connect these activities to the garden and academic subjects?
- If you do not have a classroom with a stove or oven, how might you still be able to prepare these dishes with your students?
- How might you store and share materials to be used by multiple classrooms?
- Food is integral to culture. How can you incorporate ethnic foods into your cooking/nutrition lessons?

# Tips for Cooking with Kids

## ***Enjoying Food with Students***

Enjoying a fresh harvest is one of the best parts of gardening with students. Many teachers have noticed that students who have helped grow, harvest, and prepare fruits or vegetables are more likely to try them, like them, and want to eat them again. However, this openness does not come from teachers *requiring* their students to try new foods, and doing so may actually get in the way of students developing more positive attitudes toward fruits and vegetables.

Let your students know that you hope they will try new things, but that they will not be required to eat anything, and they will never have to finish anything they don't like. Some teachers tell students that if they take a bite of something and don't care for it, they can spit it out onto the soil, where it will decompose and help new plants grow. Many students, when given this freedom, feel less apprehensive about trying new fruits and vegetables.

Don't be discouraged if students don't try something the first, or even third, time it is offered. Some students may need to see a food several times before they accept it enough to try it; and they may need to try it a few times before they come to like it. Keep offering fresh snacks from the garden, and make sure the students see you enjoying the snacks yourself!

## ***Cooking Supplies***

The following is a list of basic supplies for cooking in the classroom or in the garden. Quantities are geared for up to five small groups of 2-4 students each. Some schools keep their cooking supplies on a rolling utility cart. This allows them to be shared among classes, put away easily, or even rolled outside for an outdoor cooking project. Many of the supplies below can be bought inexpensively at second-hand stores or donated by parents.

10	cutting boards, thin plastic	5	whisks
10	round-tipped steak knives	1	can opener
	Small, medium & large pots with lids	2	manual citrus juicers
2	large skillets	1	ladle
5	baking sheets	4	potholders
2	9"x13" baking pans	2	rolling pins
5	mixing bowls	1	salad spinner
1	colander	1	bottle of dishwashing soap
5	cheese graters	5	sponges with scrubbing side
5	liquid measuring cups	2	large dish tubs
5	sets of dry measuring cups	2	large dish-drying racks
5	sets of measuring spoons	5	kitchen towels
5	wooden spoons	1	electric skillet (optional)
5	spatulas	1	blender
1	steamer basket	1	hand mixer
5	vegetable peelers	2	electric hotplates
		1	first aid kit

## ***Food Safety***

Safety concerns should always be foremost in your mind when cooking with students. Be informed about any food allergies in your class, as well as your district's policies on food and health. Establish hand-washing routines and safety rules with your class.

## ***Washing Hands***

All participants in cooking activities should wash their hands before cooking, after taking a break from cooking, after touching their faces, sneezing, or coughing, and before drying or putting away dishes. Teach students to wash with warm water and soap for 20 seconds, then dry their hands with a clean cloth towel or paper towel. Demonstrate for students coughing into your shoulder, or "scratching" an itchy nose with your upper arm.

## ***Safe Food Handling***

- Cover all cuts on hands with bandages or gloves while cooking.
- Tie long hair back during cooking.
- Consider excluding ill students from cooking activities.
- Wash the sink with hot soapy water before and after washing fresh produce.
- Wash produce under running water, just before preparing or eating, unless it comes in a package that says it is pre-washed.
- When appropriate, scrub produce with a clean vegetable brush. Scrubbing is especially important with melons in particular, to remove any bacteria that may be on the rind before slicing through the rind and spreading the bacteria to the interior of the fruit. Sanitize the brush by placing in boiling water for 20 seconds or rinsing in a weak bleach solution (1 teaspoon chlorine bleach in a quart jar of water).
- Don't use dish soap or hand soap for washing produce, as it may remain on the fruit after rinsing.
- To dry fruits or vegetables after washing, use paper towels.
- Wash cutting boards before and after food preparation. If you have access to a dishwasher, use it to clean and sanitize cutting boards. If not, rinse them in a weak bleach solution (see above). Use separate cutting boards for produce and meat products. Do not place cooked foods on the same surface that was used to prepare the foods when raw; this is especially important for meat products but also applies to vegetables.
- Designate one person to serve each dish (for example, one person is in charge of ladling soup into bowls) rather than allowing every person to touch the same serving utensil.
- Keep hot foods hot if serving over an extended period of time.
- Store all cut vegetables or fruits and prepared foods in the refrigerator, letting them sit out for no more than two hours before refrigerating.

## **General Cooking Safety**

- Turn pot handles to the back of the stove.
- Turn burners off when not in use.
- Keep flammable items away from the stove.
- Keep electrical cords away from water and wet hands, and secure them so that no one gets accidentally caught by them (taping them down can lessen the tripping hazard).
- Keep the cooking area free of things that students might trip over.
- Ask students to walk, not run, in the cooking area.
- Warn students when items such as electric skillets are turned on.
- Wait to serve hot food until it is cool enough to safely eat, but also teach students to test the temperature with their fingers and blow on the food if necessary.

## **Basic Knife Safety Rules**

Consult your school's policy on knife use before introducing knives in the classroom. Make a poster of simple knife use rules, and discuss knife safety every time knives are used.

- **Elbow Room:** Make sure you have plenty of space before starting to use a knife (some teachers advocate spacing students more than an arm's reach apart).
- **Eyes on the Task:** Watch what you are doing while using a knife. If you need to look up, stop cutting for a moment.
- **Claw & Saw:** The hand holding the food should be in a claw shape, with fingers curved and the thumb behind the fingers. The cutting hand "saws" with the knife well away from the fingers. Alternatively, the non-cutting hand can be placed on top of the hand with the knife.
- **Low & Slow:** Take your time when cutting, and keep your knife at the cutting board, not waving through the air.
- **Cut Away From Yourself:** Cut away from your body, not toward your body. Keep the knife tip facing the center of the table, and the blade facing down toward the cutting board.
- **Knives in the Basket:** When you are done with your knife, place it in the knife basket in the center of the table. Never walk away with your knife, and never place knives in a sink or dish tub full of water; someone washing dishes could accidentally take hold of a knife and get hurt.
- **Hand it Over Carefully:** If you need to hand someone a knife, offer the handle and point the blade toward the floor, so he or she doesn't accidentally grab the blade,

If your students will be cutting round, hard things like beets or carrots, have an adult cut the items in half so that they have a flat surface that can be placed down on the cutting board, and won't roll around while the students are cutting. For younger students, boiling or steaming vegetables first makes them easier to cut.

When selecting knives for use with students, consider age level and the tasks at hand. Round-tipped steak knives are great for older elementary students, and work well for most vegetables. The serrated edge works well with a “sawing” motion. For younger students cutting soft foods, some teachers use nylon knives or pumpkin carving knives, which are serrated without being sharp.

## ***Strategies for Cooking with Students Successfully***

Cooking with students requires thorough preparation and a plan for organizing the activity. Make sure you have all ingredients and needed equipment; make sure you have enough copies of the recipe; and figure out how you will divide up the tasks in the recipe.

### ***Getting Organized***

There are several ways to organize a cooking activity with students.

- Small Groups - divide the students into small groups and have each group prepare the same recipe, each group has everything—all the ingredients and equipment to make the recipe.
- Large Group - divide into small groups and have each group harvest and prepare a different part of the same recipe; then combine the ingredients.
- Cooking Show - imitate a cooking show, with the teacher at the front of the class doing the bulk of the cooking, but inviting students to the front to help with certain tasks. This method is less participatory, but can be fun and appropriate for certain recipes.
- Production Line - use an assembly-line approach. The ingredients are lined up in one location, and students travel down the line adding each item to their plates or bowls. This is useful for simple recipes such as trail mix or salads. It is helpful to have instructions at each item such as “Take one spoonful.”

When planning to cook in small groups, some teachers place all supplies and ingredients on one central table, so that one student from each group can get each item as needed and then put it back for other groups to use. Other teachers prefer to give each group a tray loaded with everything they need. Give each group a large-print copy of the recipe they will be using, so that the whole group can read it together. Laminating these copies will make it easy to reuse them next year.

It is ideal, when cooking in small groups, to have one adult per group of 5-10 students. To achieve this student-to-adult ratio, you may invite parent volunteers to lead the lesson with small groups simultaneously, or you might engage your class in an independent learning activity while you do the lesson with one small group at a time.

Prepare the cooking area ahead of time, so that when students arrive, they can simply wash their hands, watch a demonstration of how to do the specific tasks in the recipes, and then split into groups and complete the tasks. Depending on your students’ grade level and



abilities, you may assign each student specific tasks, or you may allow them to choose their own tasks within their small groups.

When deciding how to break a recipe into individual tasks, remember that students will be more concerned with having jobs to do than with efficiency. So for example, if a recipe calls for 2 ½ cups of flour, and your students are working in groups of five, passing the bag of flour and asking each student to add ½ cup of flour often works better than having one student measure all the flour. Rotating the task of stirring is also helpful.

### ***Modeling Cooking Skills***

Demonstrate good cooking skills for your students, and ask classroom volunteers to do the same. When beginning a recipe with students, ask students to read through the recipe out loud, to check that they have all the necessary ingredients and supplies assembled and to make sure that they understand all the steps of the recipe.

Before allowing students to measure, demonstrate using a dry measuring cup for dry ingredients and leveling it off; demonstrate using a liquid measuring cup for wet ingredients, setting it on a level surface and getting your eyes level with the liquid to judge the accuracy of the measurement. Demonstrate how to measure accurately with measuring spoons, holding the spoon over a separate bowl while filling it, so that if it is overfilled, the empty bowl will catch the mess and the excess will not end up in the recipe.

If you will be cooking a recipe that would benefit from students' tasting it to adjust seasonings, model a way to taste without sharing germs. Use a clean spoon, take a small amount of food, exaggerate blowing on it and checking the temperature, taste, and then deposit the spoon in the dish tub (with an enthusiastic "Mmm!" or "Needs a bit more salt!").

After you have demonstrated a task, such as chopping carrots into half-rounds or slicing a bell pepper into 2-inch strips, leave your sample out. Students can then look back at the example on the cutting board to remember what the final product should look like.

## Age-Appropriate Cooking Tasks

Kids love to help prepare food. In addition, the more involved they are in harvesting and preparing healthy foods, the more likely they are to eat them. Of course, the ways kids can be involved will depend on their dexterity, their ability to follow directions, and their age and experience.

The following is a list of age-appropriate food preparation tasks brainstormed by teachers attending Life Lab workshops. These are all recommended for supervised groups of about six children at a time.

### Grades K-2

- Cracking eggs
- Crumbling
- Cutting soft items (with scissors or nylon Curious Chef knives; you can parboil carrots and other hard veggies to make them softer)
- Grinding
- Juicing
- Kneading
- Mashing
- Measuring (you can pre-measure and then have each child measure part, knowing that the entire amount will eventually get mixed in)
- Picking off stems
- Presentation (e.g., decorating with flowers)
- Pushing buttons (on a blender, for example)
- Rolling/Wrapping
- Scooping
- Spinning salad
- Spreading
- Sprinkling
- Squeezing
- Stirring
- Tearing leaves, etc.
- Using an apple peeler
- Using an egg separator
- Using a food mill
- Using a mortar and pestle
- Washing (you can give each child 1-2 leaves)

### Grades 3-6

- Blending
- Chopping, slicing, dicing, and mincing with round-tipped steak knives
- Collecting compost
- Doubling or tripling recipes
- Grating
- Reading recipes
- Sautéing
- Seasoning
- Washing

### Grades 7-12

With appropriate supervision and instruction, children in this age group are generally capable of just about any task described in a recipe. Cooking with this age group also provides us with excellent opportunities to teach or reinforce their math skills, such as adding or multiplying fractions or graphing food waste over time. For on-going cooking instruction, children this age can start to improvise in the kitchen or use their own ideas to improve upon recipes.

## **Serving**

Once the recipe is prepared, we recommend cleaning the entire cooking area first. In many cooking activities, this can be done while the meal is on the stove or in the oven. Then, once the entire area is clean, make sure that students are seated before serving the food. Give them a few minutes to enjoy what they have made before guiding students into further discussions. Allow students a chance to share what they liked, and what they might do differently if they made the meal next time. Then conclude with any relevant discussion topics, such as where the ingredients came from.

## **Cleaning Up**

Use a set of laminated “Clean Up Cards” that students pull from a hat to assign and guide them in clean up tasks. *See next page for printable Clean Up Cards.* You may need to adapt these cards to fit the specific clean up needs of your food preparation area.

**Dish Washer: Scrub all dishes with soap and warm water**

**Counter Cleaner: Bring dirty dishes to sink and clean counter**

**Dish Rinser: Rinse soap off of dishes**

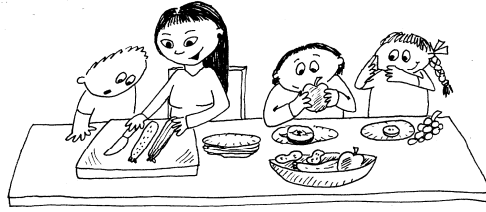
**Store Food, Compost, Recycle, Garbage: Put leftover food in refrigerator, food scraps in compost bin, and recycle or throw away any remaining garbage**

**Dish Dryer: Dry each dish with a clean dish towel**

**Supply Organizer: Put away aprons, cooking equipment, unused ingredients, stools, etc.**

**Dish Organizer: Put away dry dishes**

**Sweeper: Sweep the floor**



## Knife Safety Lesson

**Grade Level: 2-8**

**Description:**

In this lesson, students will discuss the hazards of working with sharp knives and then the teacher will demonstrate procedures for working with knives safely. This lesson is best done directly before the first food preparation lesson that involves kitchen knives.

**Objective:**

Students will know how to use a knife safely, and they will understand that they must follow safe knife use protocol in order to participate in food preparation that involves kitchen knives.

**Teacher Background:**

While cooking can be a highly engaging and educational activity, it can also be dangerous. This is particularly true when using kitchen knives. Nonetheless, by effectively establishing procedures at the outset and sufficiently supervising students, students can safely use kitchen knives to participate in a wide variety of food preparation activities. We only recommend allowing students to use knives in groups of 8 or less with 1 or more adults. You can do this by running a cutting station while other students work independently on a separate project, or by inviting in other adult volunteers to supervise small groups.

**Materials:**

- 1 clean work surface
- 1 cutting board
- 1 kitchen knife (we recommend round tipped serrated steak knives)
- 1 fresh fruit or vegetable for slicing
- Chart paper
- Markers

**Preparation:**

Set out all materials onto a clean work surface in an area where all of your students can see you at once.

**Class Discussion:**

*In this class, we are going to use knives. Of course, knives can be dangerous, and you will only be allowed to use these knives if you agree to use them properly. Knives are tools in the*

*kitchen, but they are not toys to be played with, even jokingly. What can knives help us do in the kitchen (chop vegetables, slice fruit, etc.)? Of course, if we are not careful with knives, we can cut ourselves or others. Who here has ever used a sharp knife? Keep your hand up if you can tell us one tip for using a knife safely?*

Create a Safe Knife Use procedures list, and make sure it includes the following tips:

- Give yourself space - Only use a sharp knife when you know that no one else is within an arm's reach of you.
- Claw and Saw - To keep your fingers out of the way of the blade, you can hold your fruit or vegetable with a "claw" rather than with straight fingers and then use the knife to "saw".
- Cut round things in half, and then place the flat edge down to cut more.
- Always leave knives at the table - When students are finished with their knives, they can wipe them down with the wet towel on the table and place them in the bucket for cleaning later.
- Stay focused - Take your time and pay attention to your work. If someone calls your name, for example, you can stop what you're doing to look up and respond.

### **Action:**

*I. Now that we have this list, I will demonstrate safe knife use for you. As I am working, please raise your hand when you see me following one of the guidelines. (between each step listed below, pause, put your knife down on your cutting board, and call on people with their hands raised.)*

- Wash your hands and your fruit or vegetable with soap and warm water. Explain that you already washed the knife and cutting board.
- Before you pick up a knife, stretch your arms out and swing them in front of you and out to the sides. Then say, "Okay, no one is too close to me. I can safely use a knife here."
- Make a claw with one hand by bending all fingers. Using the claw, pick up your fruit or vegetable.
- Pick up a knife and begin to slice the fruit or vegetable you have, keeping your knife as far from your "claw" as possible. Turn your fruit or vegetable so that you are clearly able to cut away from your hand and body.
- Wipe your knife off with the wet towel and place it in the bucket.

### **Wrap Up:**

Reiterate the importance and seriousness of knife safety.

### **Digging Deeper:**

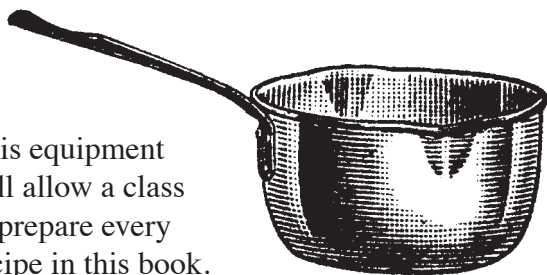
Without using a real knife, have student volunteers act out one of the knife safety tips and allow the class to guess which tip they are acting out.

# Cooking Equipment

The recipes and activities in this guide may be prepared with everyday kitchen equipment and materials, much of which can be borrowed from home or from the school cafeteria. Try to choose sizes appropriate for a large family. Remember that 20 children is the maximum number of students that is recommended for a safe and quality cooking experience.

If you have the resources for a more permanent set-up, a rolling cart equipped with all the necessary cooking equipment can be a wonderful asset for the school. Properly cared for, it can be used by many classes over many years.

The following kitchen kit includes all the equipment and materials needed for a class of 20 students to perform all the recipes in this guide except those involving an oven. All equipment and materials listed are available at most large drugstores, department stores, or discount stores. The cost of the kit will depend on the quality of materials but may range from \$450 to \$700. Better-quality equipment will last longer and give more satisfactory results; it is often well worth the added expense. A portable convection oven will add about \$250 to the cost.



This equipment will allow a class to prepare every recipe in this book.

As all resourceful teachers and classroom volunteers know, a few pieces of equipment will suffice for many of the recipes. Equipment may be obtained through donations or at thrift stores. For assistance with funding, contact your school's parent-teacher association for information. See also Appendix B, "Farm to School Resources."

## Class Equipment

- 2 electric hot plates
- 2 large (12- to 14-inch) nonstick frying pans or skillets
- 1 blender
- Assorted sizes of pots with lids
- 1 steamer insert for saucepan
- 1 chef's knife
- 2 large wooden spoons
- 2 spatulas
- 1 set of tongs
- 3 whisks, assorted sizes
- 1 egg beater
- 3 mixing bowls, assorted sizes
- 1 colander
- 1 ladle
- 1 slotted spoon
- 1 potato masher
- 1 can opener
- 1 salad spinner
- 2 large plastic tubs
- 5 sponges with rough side
- 1 bottle of dishwashing liquid
- 4 kitchen towels
- 4 pot holders
- 2 baking sheets
- 2 large baking pans or dishes
- 2 canisters for salt and pepper
- 1 food mill
- 1 rolling cart
- 3 large plastic containers to store equipment
- first aid kit

## Additional Optional Equipment

- electric skillet
- food processor

## Student Equipment

- 10 small plastic cutting boards
- 10 serrated knives with rounded ends
- 5 vegetable peelers
- 5 sets of measuring spoons
- 5 sets of measuring cups
- 5 box graters
- 5 small citrus juicers
- 5 medium whisks
- 20 spoons
- 20 plastic bowls
- 20 plastic plates

Kids Cook Farm Fresh Food  
Bulgur Salad

**Station #1 (4 people) -**

Materials:

2 cutting boards

2 knives

2 bowls

4 napkins

4 forks

4 plates

Journals

4 roasted red bell peppers

2 garlic cloves

Directions:

1. Peel off the skin of the roasted red peppers and cut the peppers into  $\frac{1}{4}$  inch strips, about 2 inches long.
2. Mince the garlic finely.
3. Bring chopped ingredients to the large mixing bowl in the front of the classroom.
4. Bring compostable food scraps to the compost pail.



Kids Cook Farm Fresh Food  
Bulgur Salad

**Station #2 (4 people) -**

Materials:

2 cutting boards

2 knives

2 bowls

4 napkins

4 forks

4 plates

Journals

2 cucumbers

1 large bunch scallions

Directions:

1. Wash, peel, and dice cucumber into  $\frac{1}{4}$  inch cubes.
2. Wash and chop scallions finely.
3. Bring chopped ingredients to the large mixing bowl in the front of the classroom.
4. Bring compostable food scraps to the compost pail.

Kids Cook Farm Fresh Food  
Bulgur Salad

**Station #3 (4 people) -**

Materials:

2 cutting boards

2 knives

2 bowls

4 napkins

4 forks

4 plates

Journals

Feta Cheese

Mint

Cilantro

Salt

Black Pepper

2 Lemons

Olive oil

Directions:

1. Crumble enough cheese to measure 2 cups.
2. Squeeze lemons to get 6 Tablespoons lemon juice.
3. Chop enough mint to get 4 Tablespoons.
4. Chop enough cilantro to get 4 Tablespoons.
5. Prepare the dressing – mix lemon juice, 1 t. salt, and 1/8 t. pepper. Then stir in ½ c. olive oil. Finally, mix in the herbs.
6. Bring cheese and dressing to the large mixing bowl in the front of the classroom.
7. Bring compostable food scraps to the compost pail.

# 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. Have 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**

Review 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 how to chop scallions, cucumbers, garlic, mint, and cilantro. Provide each group with a portion of these ingredients to prepare.
4. Have groups prepare the ingredients and place them into separate bowls.
5. Have 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. Show 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 serve 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.

# Eat a Rainbow

## **Overview**

Phytonutrients are chemical compounds that occur naturally in plants and have a beneficial effect on human health. Some phytonutrients such as beta carotene (orange) and lycopene (red) are responsible for the vibrant colors you see in fruits and vegetables. “Eating a rainbow” of fruits and vegetables ensures we get a variety of phytonutrients to keep our bodies healthy.

In this lesson, students use a life-size drawing of the human body to illustrate what effects fruits and vegetables of every color have on human health. Students also visit the garden and harvest items of every color to reinforce the strategy for eating a wide variety of fruits and vegetables.

## **Demonstration Lesson**

“Eat A Rainbow,” from **Life Lab’s Plant It Grow It Eat It!** workshop series

## **Logistics**

*Time required:* 40 minutes

*Location:* Classroom first, ending in the garden for the final activity

*Materials List:\**

- Butcher paper long enough to trace a human body
- Markers
- Clipboards
- One wallet-sized piece of cardstock for each student
- Markers/colored pencils for students
- Fruits or vegetables of each color (from the garden if possible)
- One copy of Rainbow Card reproducible, with each card cut out

*\*(Summarized from the Demonstration Lesson. Refer to the original for a complete materials list.)*

## ***Free online lesson about “Eating a Rainbow”***

**Got Veggies?** “Color Scavenger Hunt” page 41. Students explore the garden with descriptive color clue cards to identify a variety of fruits and vegetables. For grades 2 – 3. [http://www.dhs.wisconsin.gov/health/physicalactivity/pdf\\_files/Got%20Veggies/GotVeggiesweb12mb.pdf](http://www.dhs.wisconsin.gov/health/physicalactivity/pdf_files/Got%20Veggies/GotVeggiesweb12mb.pdf)

## ***Free online resources that support teaching about “Eating a Rainbow”***

### **Produce for Better Health (PBH) Fruits and Veggies: More Matters**

This website is a bounty of great information to increase your personal knowledge about phytonutrients and much more. Other parts of the website include children’s activities, meal planning strategies, and resource links.

<http://www.fruitsandveggiesmorematters.org/eat-a-colorful-variety-of-fruits-and-vegetables>

### **What Color is Your Food? Taste a rainbow of fruits and vegetables for better health.**

This guide has a variety of useful information to help increase consumption of fruits and vegetables, including produce lists for each color as well as strategies for adding color to your meals. One great feature is a “Colorful and Nutritious Menu Makeover”.

<http://www.ag.ndsu.edu/pubs/yf/foods/fn595.pdf>

## ***Food for Thought***

- Can you see doing these lessons with your students?
- How might you modify it to fit your student population?
- How else can you fit “diversity” into your discussion? – Dietary, Cultural, societal...and how does experiencing diversity not only change your dietary health but possibly improve your cultural, emotional, sociological health?
- What cultural foods have limited diversity or wide diversity when it comes to fruits and vegetables? Why might that be and what effects might this have?
- How might this connect with other subjects you teach?
- How might you further connect these activities to the garden? To edible activities? To nutrition? To your community?



## Eat a Rainbow

**Recommended Grade Level:** 4-8

### **Description:**

Students discuss and illustrate what fruits and vegetables of every color do for the body.

### **Background**

Fruits and vegetables are important in our diet. They contain various concentrations and combinations of phytonutrients and each plays a range of roles in keeping our bodies healthy. Some might strengthen our immune system while others might help us develop and maintain strong bones and teeth. Phytonutrients also give fruits and vegetables a spectrum of vibrant colors so “eating a rainbow” of fruits and vegetables is a good way to ensure that we are getting all of the phytonutrients that we need to support good health.

### **Materials**

- Butcher paper long enough to trace a human body
- Markers
- Clipboards
- One wallet-sized piece of cardstock for each student
- Markers/colored pencils for students
- Fruits or vegetables of each color (out in the garden if possible)
- One copy of Rainbow Card reproducible, with each card cut out

### **Preparation**

1. Photocopy and cut apart the color cards from the Rainbow Card reproducible.
2. Take a walk around the garden with the Rainbow Card reproducible and look for produce you can harvest and eat from each color group. If you're missing any colors, supplement with produce from a farmers' market or grocery store. Pick one sample of each fruit or vegetable you'll be eating.

### **Activity**

1. Ask students to brainstorm: *What is nutrition and why is it important?* Write the responses where everyone can see them. (*Nutrition is the effect of food on health, growth, and development of the body. It is important for better performance in school, work, sports, etc. You feel good, don't get sick, have energy to do things...*)
2. Put the butcher paper on the floor and ask a volunteer to lie on the paper. Have another volunteer trace the outline of the person lying down. Once the body is traced, put it up where everyone can see it. Pass out worksheets and markers or colored pencils.

3. Divide the class in half. Hand each person or pair in the first group a whole fruit or vegetable or picture of one that you'll be sampling. Hand each person or pair in the second half a color card.
4. Explain that students' job is to group themselves so that each fruit or vegetable is matched with the correct color card. Then they will prepare, as a team, to convince the rest of the class that their fruit or vegetable is the most important one to eat.
5. Give the groups 5-10 minutes to prepare their arguments.
6. Have each group share out why they think their vegetable is the most important for us to eat. You can do an example with a fruit or vegetable they aren't using. (I am going to talk to you today about kale. Kale is a green vegetable, so it is good for strong bones and teeth. And you need teeth to eat all the other vegetables! So eat your kale!)
7. After each short presentation, summarize why the color is good for you by coloring in parts of the body with that color. (*Okay, green veggies can be good for bones, so I'll draw in some bones and teeth with green marker.*) Note: Allow students to help you come up with creative ways to represent each fact. For example, you might draw a shield in yellow or orange to represent a strong immune system.
8. As you draw on the butcher paper, have each participant do the same on their wallet-sized card. On the back, have them include a brief written explanation of why fruits and vegetables of each color are good for our health (For example, red can be good for healthy heart and memory).
9. Head out to the garden with your class and harvest and enjoy as many of the colors as you can find. As you eat each one, review how it will support your health.
10. Laminate the cards and give them back to students as a pocket reference guide.

### **Tying it Together**

*So, which color is the most important to eat? If I want to stay healthy, which color should I eat? (All of them! We should eat a rainbow!)*

### **Digging Deeper**

- Cook meals that use a rainbow of colors.
- Have students write down what they ate yesterday and list the colors they ate in each meal. Have students reflect on their lists and ask them to think of ways they can incorporate missing colors.

### **National Standards**

NSES: K-4: Personal Health; 5-8: Personal Health

NHES: Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.



## Color Card Master

<p><b>RED</b></p> <p>Can improve heart health, memory function; can lower risk of some cancers.</p> <p>Examples: apples, tomatoes, strawberries, watermelons, beets, cherries.</p>	<p><b>YELLOW/LIGHT ORANGE</b></p> <p>Can strengthen your immune system, can provide strong vision.</p> <p>Examples: oranges, grapefruit, corn, yellow peppers, yellow apples.</p>
<p><b>DARK ORANGE</b></p> <p>Contributes to strong vision, healthy heart, and strong immune system.</p> <p>Examples: Carrots, oranges, melon, squash, sweet potatoes, orange peppers.</p>	<p><b>GREEN</b></p> <p>Can help with strengthening bones and teeth. Can help vision. Provides high fiber for healthy intestinal tract and can lower cholesterol.</p> <p>Examples: Leafy greens, broccoli, cabbage, lettuce, avocado, kiwi.</p>
<p><b>BLUE/PURPLE</b></p> <p>Can contribute to healthy aging, can increase memory function.</p> <p>Examples: Grapes, raisins, purple cabbage, eggplant, plums, blueberries, blackberries.</p>	<p><b>BROWN/WHITE/TAN</b></p> <p>Can promote heart health, increase immune system function, and decrease cholesterol.</p> <p>Examples: Cauliflower, onions, garlic, bananas, white corn, potatoes.</p>

# Eating from the Garden

## One Bite Lessons: Easy and Edible

### **Overview**

“One Bite Lessons” are edible activities that don’t require a kitchen or excessive preparation. They are fun and creative ways to sample plants right from the garden.

Harvesting food straight from the garden is a powerful act. For many kids the school garden is the only place they will experience eating “straight off the vine.” Students who harvest straight from the garden are often more adventurous and try food they might not sample otherwise. Use this time to explore the garden and show students what is good to harvest in the garden. Remember to follow safe hand and produce washing practices. If garden production is low consider supplementing the garden harvest with produce from the farmer’s market or store.

### **Logistics**

Recommended Grade Level: Pre-K to 12

Season: Any

Location: Garden with edible plants

Time required: About 10-30 minutes

### **Suggested Materials**

Depending on what you are harvesting you might consider

- Harvest baskets or bags
- Cutting board or plate
- Knife
- Cloth napkin or paper towels
- Hand shears or scissors
- Appropriate seasoning such as lemon or lime, hot sauce, dressings
- Store bought produce if needed

Supplies for hand and produce washing

- Spray bottles for rinsing veggies
- Colanders to set on top of buckets for rinsing veggies
- Hand sanitizer or wipes if there are no sinks for hand washing

## Food Safety

Outdoor sink areas are very useful for any edible garden project. If possible, several faucets and multiple sinks will speed up hand and produce washing. Make this a priority as you are developing your garden plans.

**However, you can enjoy safe, clean produce even without a sink, if you keep in mind a few simple but important steps and concepts:**

- 1) Check that the water used in your garden is safe for drinking.
- 2) Veggies and fruits always need to be washed with *running* water, meaning that water needs to freely flow off of the surface of the produce to remove germs and contaminants.
- 3) Do not use soaps to wash produce.
- 4) For root crops with dirt on the surface such as carrots, you can first scrub and rub the produce in a bucket or sink of standing water to remove the visible dirt. *Then* complete the last produce wash under running water.
- 5) If you don't have a sink, the run-off from produce washing efforts should be collected or channeled or you'll quickly end up with weedy, muddy patches in your garden.
- 6) Handwashing needs to be under running water. Children should not share standing water for any step in handwashing.
- 7) Use biodegradable hand soap so that handwashing water can be collected and used in the garden.
- 8) Hand Sanitizer is an effective alternative if clean running water is not available.

The following are some suggestions for cleaning produce and hands when you don't have sinks.

Hand washing without a sink	Produce washing without a sink
<ul style="list-style-type: none"><li>• A large water dispenser with a spout set on a table or chair. One student holds the spout open while another student washes his/her hands. Place bucket or dishpan underneath to catch the run-off.</li><li>• Wet hands with spray bottles. Rub, soap, and rinse with hose held over a bucket, a garden bed, or at the base of a fruit tree that needs water.</li><li>• Hand Sanitizer</li></ul>	<ul style="list-style-type: none"><li>• Place a colander of produce on top of a bucket, rinse produce with hose letting water run off and collect in the bucket.</li><li>• Use spray bottles to drench produce. Rub surface, then rinse with running water.</li><li>• For berries, cherry tomatoes, peas, or edible flowers, use a fan sprayer attached to a hose to thoroughly rinse the produce on the vine before picking.</li></ul>

## Activities

The following are examples of one bite lessons. Share your own One Bite Lessons and see others at [www.csgn.org/blog/2012/07/30/one-bite-lessons](http://www.csgn.org/blog/2012/07/30/one-bite-lessons)

**Bubblegum Kale:** Sandwich a piece of spearmint inside kale. Chew and enjoy.  
*Invented by Samantha, age 4, Berkeley, CA.*

**Lettuce Buffet:** Harvest several different kinds of lettuce, wash it, put a little bit of each kind on a plate. Sample all the various lettuces, without the salad mess.  
*Contributed by Chase Avenue Elementary, El Cajon, CA.*

**Flavored Water:** Add crumpled mint leaves to your water bottles or glasses of water. Shake or stir, enjoy the minty goodness. Also try with other herbs or fruits. Sliced strawberries, cucumbers, lemon verbena leaves, citrus slices, or lemon balm leaves are all good options. *Contributed by CAFF's Central Coast Farm to School Program, Watsonville, CA.*

**One Bite Salsa:** Harvest a pepper and snip off some onion greens. Have kids harvest a couple of cherry tomatoes. Break pepper into pieces, tear up small pieces of onion greens. Eat cherry tomato, pepper piece, and a bit of onion in one bite.  
*Contributed by the Life Lab Garden Classroom, Santa Cruz, CA.*

**Flower Feast:** Discuss which flowers in the garden are edible. Harvest a variety of edible flower and eat a mini bouquet or go on a floral walk sampling different flowers as you pass them. *Contributed by the Life Lab Garden Classroom, Santa Cruz, CA.*

**Six Plant Part Burrito:** As a group harvest edible roots, stems, leaves (large ones like roman lettuce), flowers, fruits, and seeds. Wash veggies. Use a cutting board or plate and cut plant parts up in small pieces (minus the large edible leaf part). Have kids fill their leaf up with samples of each plant part. Roll up your "burrito" and munch on down or sample each part separately. Also known as Six Plant Part Tacos, Finger Salads, and many other creative names. *Contributed by the Life Lab Garden Classroom, Santa Cruz, CA.*

**A Taste of Nectar:** Use a variety of edible flowers in the garden. Have a discussion about flowers, nectar and pollinators. Have the children observe the insect activity in the garden and ask questions. Then introduce plants with edible flowers. Borage works great. Give each child a borage flower. Have them gently remove the pistil of the flower and lick the nectar from the receptacle. Also try plants like cilantro and radishes that have bolted. With cilantro flowers, have the children "dab" the flower on their tongue and see who can taste the nectar! And don't forget, all these flowers can be eaten too! *Contributed by St. Cornelius School, Long Beach, CA.*

**Sour Face:** Harvest lemons, rhubarb stems (leaves are toxic to eat), or other sour tasting plants. Eat and watch the sour faces show up. *Contributed by the Life Lab Garden Classroom, Santa Cruz, CA*

**Pick a Salad Day:** Take the class out to the garden with a spray bottle filled with water. Each student team has a plate and napkins. They harvest their vegetables, wash them with the water bottle and sit down for a salad party. They will try things they have never eaten before just because they grew it and picked it. Swiss Chard is a favorite. *Contributed by Bethune Academy.*

## ***Additional free online resources about Eating from the Garden***

### **Vegetable Planting and Harvesting Tips**

A four page handout take from Life Lab's *The Growing Classroom* which summarizes planting care and harvest tips for 32 crops.

<http://csgn.org/sites/csgn.org/files/Vegetable%20Planting%20&%20Harvest%20Tips.pdf>

### **Food Safety Tips for School Gardens**

A six page handout from the National Food Safety Management Institute

<http://nfsmi.org/documentlibraryfiles/PDF/20110822025700.pdf>

### **National Gardening Association's Food Gardening Guide**

Provides details on growing and harvesting edible crops.

<http://www.garden.org/foodguide/browse>

Share your "One Bite" lessons and see others

at [www.csgn.org/blog/2012/07/30/one-bite-lessons](http://www.csgn.org/blog/2012/07/30/one-bite-lessons)

***Feeling Fine with Fresh Foods Teacher Packet*** "Six Plant Parts" lesson, pp.17-18

<http://www.lifelab.org/2012/02/feeling-fine-with-fresh-foods-lesson-packet/>

Dress a student as a plant while learning basic botany and edible plants parts. This is a nice activity to do before a garden harvest walk.

6 Plant Part Skit See a video at **Life Lab's**

**YouTube** [www.youtube.com/user/lifelabvideos](http://www.youtube.com/user/lifelabvideos), view or directly at

<http://youtu.be/8R7fVI7esZE>

## ***Food for Thought***

- Can you see doing these lessons with your students?
- How might you modify it to work in your garden?
- How might you connect these activities to nutrition education?
- What other ways have you practiced safe food handling and hand washing in the garden?



# Food Safety Tips for School Gardens

Schools across the nation are using gardens to help children discover where food comes from and to develop healthy eating habits. Gardens provide a way for children to grow, harvest, prepare, and ultimately taste new fruits and vegetables. When appropriate precautions are taken fruits and vegetables from school gardens can be served safely to students. Before starting a school garden, check with your local health department about their policies on serving food grown in gardens in school meals.

Potential food safety risks should be taken seriously. Produce grown in gardens can be contaminated during growth, harvest, transportation, preparation, or service and result in foodborne illness. The practices addressed in this document will help program operators enhance the safety of fruits and vegetables grown in school gardens.

Produce grown in school gardens may also be served in classrooms. These food safety tips are also applicable for produce served in classrooms. For additional tips, see *Handling Fresh Produce in Classrooms*.

## Site Selection, Materials, and Water Use

- Locate gardens away from potential contamination sources (garbage, utilities, animals, water runoff, flooding, septic systems, etc.).
- Contact the utility companies or call 811, the national “Call Before You Dig” number, a few days before digging to ensure that you avoid gas or electric lines.
- Identify soil history from all sources. Have soil tested to determine levels of contaminants such as chemicals, pesticides, lead, etc., especially if located near high-traffic zones. Contact your local Cooperative Extension Office for information on soil testing services available in your area.
- Create reasonable barriers to keep wild animals away from the garden. Examples include fencing or cages over produce items such as strawberries, leafy greens, etc.
- Consider purchasing soil that has been commercially packaged and labeled for growing food crops. Soil purchased from a commercial source ensures traceability.
- Use non-toxic, non-leaching materials for raised-bed gardens, containers, stakes, or trellises. Do not use pressure-treated wood, used tires, single use plastics, old railroad ties, etc.
- Select non-allergenic and non-toxic plants. Check with your local Cooperative Extension office if you need assistance determining plant safety or toxicity.







# Food Safety Tips for School Gardens, continued

- Test all water sources annually, except municipal sources, for potentially harmful organisms, such as fecal coliforms, to make sure they meet the standards of the Environmental Protection Agency (EPA). Test water collected in cisterns. Contact your local Cooperative Extension Office for assistance.
- Maintain water testing records.
- Use food grade containers to transport water.

## Chemical and Fertilizer Use

- Do not use any pesticides or herbicides due to potential health hazards to children.
- Check with your county Cooperative Extension Office for the best non-chemical method of control for local pest problems.
- Read and follow the manufacturer's instructions when using fertilizer.
- Secure all fertilizers in a safe and locked location when not in use.
- Allow only adults to handle fertilizers.
- Check with your local health department about applicable Occupational Health and Safety Administration (OSHA) hazard communication requirements. Maintain Material Safety Data Sheets (MSDS) as required. More information is available at: <http://www.osha.gov/dsg/hazcom/index.html>.
- Maintain information on safe use and potential hazards that is available on product labels or from the manufacturer, for all fertilizers.
- Label the container with the common name of the fertilizer if transferring fertilizers into a dispensing container. Never use a food container.
- Dispose of fertilizer and its containers according to the manufacturer's instructions.

## Compost and Manure Use

Composting is a highly complex process that requires strict attention to specific procedures and conditions. This fact sheet summarizes key points, but is not comprehensive. Contact your local Cooperative Extension Office, or a composting expert for assistance.

- Avoid the use of raw manure, as it may increase the risk of contamination from pathogens.
- Use of composting manure in school gardens is not recommended due to increased risk of contamination from pathogens that are not completely destroyed. Contact your Cooperative Extension Office to ensure that proper procedures are followed if you plan to compost manure for a school garden.
- Consider purchasing traceable, commercially prepared compost, if manure-based compost is desired.
- Consider using worms to form vermicompost. Learn about vermicomposting at: <http://www.bae.ncsu.edu/topic/vermicomposting/>.



# Food Safety Tips for School Gardens, continued

- Add only plant products, such as fresh fruit and vegetable culls from food production (apple and pear cores and vegetable trimmings), to a school compost pile. Other plant material, such as grass clippings, leaves, and twigs also can be added to fruit and vegetable clippings.
- Do not use animal products, animal waste, or any cafeteria waste in a compost pile, as it might contain animal products. Harmful pathogens might be introduced through animal products and must be properly managed to ensure their destruction.
- Wear gloves when handling compost material.
- Locate the compost pile in a secure location away from potential contamination, such as garbage, water runoff, etc. Restrict access by animals as much as possible.



## Growing and Harvesting Produce

A school garden provides an opportunity for children and volunteers to learn about how to handle food safely. The following are some food safety tips to follow when growing and harvesting produce.

- Ensure that all persons, including staff, students, and volunteers receive basic food and gardening safety training instructions according to local health regulations. The following topics are recommended:
  - ◆ Handwashing and personal hygiene
  - ◆ Cleaning and sanitizing garden equipment and containers used to hold produce
  - ◆ Handling produce during harvest, washing, and transportation
  - ◆ Glove use
- Ensure that volunteers are covered by the school district insurance policy in the event of accident or injury.
- Require signed permission slips for all student gardeners. Permission slips should list potential hazards of working in a school garden and identify any allergies the child may have.
- Do not allow anyone to work in the garden while sick, or until 24 hours after symptoms, such as vomiting or diarrhea, have subsided.
- Ensure that all harvesters wash hands thoroughly in warm, soapy water for at least 10 to 15 seconds, and then rinse with potable water. Ensure that all open cuts or wounds on hands, arms, or legs are properly covered prior to participating in the harvest.
- Require harvesters to wear closed-toed shoes to prevent cuts, stings, or other injuries.
- Consider using single-use disposable gloves when harvesting, or handling, fresh produce as an extra precaution.
- Harvest the garden regularly and remove any rotten produce.





# Food Safety Tips for School Gardens, continued

- Use cleaned and sanitized food grade containers, such as plastic bins or buckets, to hold harvested produce. Do not use garbage bags, garbage cans, and any container that originally held chemicals. These types of containers are made from materials that are not intended for food use.
- Clean harvesting tools, such as knives, scissors, etc., with soap and potable water immediately before and after each gardening session.

## Using School Garden Produce in your School Meal Program

- Check with your local health department to ensure that local regulations permit food from gardens to be served as part of school meals.
- If the harvest from the school garden will be used in the school meals program, the school garden coordinator should work cooperatively with the school nutrition director to plan and implement the garden.
- Discuss food safety practices in the garden with school garden coordinators. Consider asking gardeners to document their practices. Use the information in this document as a guide to identify appropriate practices.
- Accept produce harvested from school gardens only when school nutrition staff is present to receive it. All produce dropped off or left when staff is not present should not be used in the school meal programs.
- See *Best Practices: Handling Fresh Produce in Schools* for guidelines on receiving, storage, preparation, and service of fresh produce in schools.
- Reject produce that does not meet school nutrition program standards.
- Receive and inspect produce harvested from school gardens according to the same procedures used to inspect produce from the district's distributors.
- Do not use any produce that has been noticeably contaminated by animals or insects.
- Refrigerate garden produce immediately, unless the particular item is normally held at room temperature.
- Store, prepare, and serve school garden produce separately from other sources of produce to maintain traceability.
- Document service of school garden produce on the menu management/ food production record. See *Ensuring Traceability of Fresh Produce* for more information.
- Ensure that liability for a potential foodborne illness caused by produce grown in school gardens is covered by your school district.



# Food Safety Tips for School Gardens, continued



## Addressing Community Donations

Members of your local community, or staff or faculty at your school(s) may want to donate produce grown in private or community gardens to your school meal programs or to your school(s). Although their intentions are good, these products must be safe and of acceptable quality to serve in your school meals program. Before accepting donations, ensure that donated produce food safety practices have been followed to grow, handle, and transport the produce.

- Check all local and state health regulations regarding receiving community donations before you accept these products.
- Provide information to community members about USDA policies and regulations for school meal programs and state and local health requirements that you must follow. Address questions in a positive manner.
- Determine whether your school district has liability insurance to cover any food safety issues that may result from produce received from private or community gardens. These entities typically do not carry product liability insurance for potential food safety risks.
- Develop guidelines and expectations for growing and handling practices for any fruits or vegetables used in your schools. Share this information with individuals or groups who are interested in donating produce to your schools.
- Visit any gardens that supply produce to your school foodservice program to evaluate food safety practices. Discuss the practices in this document with gardeners. (See *Verifying On-Farm Food Safety* for additional information)
- Only accept donations that are dropped off when a school nutrition staff member is present to receive them.
- Conduct a visual inspection of any vehicle used to transport produce to a school to assess whether it is clean. A vehicle should not be used to transport fresh produce if it is also used to transport live animals.
- Rotten or damaged produce should not be accepted.





# Food Safety Tips for School Gardens, continued

## Resources

Verifying On-Farm Food Safety

Ensuring Traceability of Fresh Produce

Best Practices: Handling Fresh Produce in Schools

Handling Fresh Produce in Classrooms

Healthy School Meals Resource System School Gardens and Farm to School Resources:

[http://healthymeals.nal.usda.gov/nal\\_display/index.php?info\\_center=14&tax\\_level=2&tax\\_subject=526&level3\\_id=0&level4\\_id=0&level5\\_id=0&topic\\_id=2314&&placement\\_default=0](http://healthymeals.nal.usda.gov/nal_display/index.php?info_center=14&tax_level=2&tax_subject=526&level3_id=0&level4_id=0&level5_id=0&topic_id=2314&&placement_default=0)

National Gardening Association, [www.kidgardening.org](http://www.kidgardening.org)

Garden to Table: Five steps to food safe fruit and vegetable home gardening. University of Rhode Island, Connecticut, Maine, New Hampshire and Vermont. <http://www.sde.ct.gov/sde/LIB/sde/pdf/DEPS/Nutrition/OPmemos/10/5stepsOM1010.pdf>

Grow It Healthy, University of Maryland Extension, [www.growit.umd.edu](http://www.growit.umd.edu)

Safety in the garden, California, <http://www.cde.ca.gov/ls/nu/he/gardensafety.asp>

Bucklin-Sporer, A. & Pringle, R.K. (2010). *How to grow a school garden: A complete guide for parents and teachers*. Portland, OR: Timber Press, Inc.

McGrath, M. (2006). *Book of Compost*. New York: Sterling Publishing Company, Inc.

**Note:** USDA's Food and Nutrition Service has addressed questions regarding the operation of a school garden in Memo SP 32-2009, dated July 29, 2009:  
[http://www.fns.usda.gov/cnd/governance/Policy-Memos/2009/SP\\_32-2009\\_os.pdf](http://www.fns.usda.gov/cnd/governance/Policy-Memos/2009/SP_32-2009_os.pdf).

While this policy memo outlines how school food authorities may operate or purchase foods from school gardens, school nutrition programs are not required to grow or use any produce from school gardens.

# Timing for Planting and Harvesting Edible Crops

## **Overview**

One of the challenges of school gardens is scheduling planting activities so that crops are sown in the optimal season for their growth AND at a time when they will reach maturity when students are present to harvest and consume the fruits of their labors. This how-to session is about getting that timing right. You will learn about frost dates in your zone and use information typically found on a seed packet to learn to plan for crop harvest during the school year.

## **Free online lessons about Timing for Planting and Harvesting Edible Crops**

**Kids Cook Farm Fresh Food “Designing your Own Farm”** (Chapter 1: Corn). This curriculum helps California’s classrooms make the connections from farm to table using cooking activities, gardening activities, and information about California agriculture. The activity includes information on the seasons in which over 30 fruits and vegetables are grown. Older students design farms and determine what they will grow in a given season. <http://www.cde.ca.gov/ls/nu/he/kidscook.asp>

**“How to Plant the Three Sisters from Three Sisters”** The three sisters—corn, bean, and squash—are all warm season crops that are planted, harvested, and eaten together to provide a range on nutrients needed in our diets. This activity guides you in the order in which to do that and gives participants an understanding of how crops grow together and how gardeners and farmers stagger planting dates to promote growth. <http://blogs.cornell.edu/garden/get-activities/signature-projects/the-three-sisters-exploring-an-iroquois-garden/how-to-plant-the-three-sisters/>

**“Seed to Salad: School-Based Program”** Timing the plantings and harvest from a salad garden is pretty easy to get right during a traditional school year. Many of the crops have a long window of time during which they can be harvested. Salads lend themselves to varying amounts of different veggies depending upon what turned out best. This activity embeds planting and harvesting a spring garden for salad into a year-long set of activities that lead up to a Salad Party at the end of the school year. <http://blogs.cornell.edu/garden/get-activities/signature-projects/seed-to-salad/>



## ***Free online resources to support efforts in Timing for Planting and Harvesting Edible Crops***

**Crop Planning Resources** from the Creating and Sustaining Your School Garden pages.  
[www.csgn.org/crop-planning](http://www.csgn.org/crop-planning)

**California Master Gardener Program.** [www.mastergardeners.org](http://www.mastergardeners.org) This website will link you to gardening expertise in your county and region. Many counties provide information on optimal planting dates specific to their area.

### ***Food for Thought***

- Do you have the resources and skills you need to successfully plan for an edible harvest?
- Are there ways you could bring your students into the work of planning for an edible harvest?
- How might this type of task connect with other subjects you teach?

# Selecting Fruit Trees and Vines for California School Gardens

*"Today is the second best day to plant a tree.  
The best day to plant a tree was 10 years ago."*

Planting a fruit tree or vine is an investment in your garden's future. When selecting a tree for a school garden there are a few basic concepts to understand so that you can make the best choice. Consider consulting a fruit tree expert to discuss the conditions described below.

## **When will the tree set fruit?**

Choose varieties that will make fruit while students are in session. There are many varieties of each type of fruit. Different varieties produce fruit at different times throughout the season.

## **Select the appropriate tree size for your garden site.**

Many trees can be purchased on rootstocks that will help determine the tree's ultimate height. Dwarfing rootstocks can keep some varieties of fruit trees under 8 feet.

## **Select appropriate varieties for your climate zone.**

Stone fruits (peaches, nectarines, plums, apricots, cherries) can be grown in areas with average annual minimum temperatures below -10°F. Pome fruits (apples, pears, and relatives) can be grown in areas with average annual minimum temperatures below -20°F. Citrus should be grown in warmer areas, where average annual minimum temperature is no lower than 30°F.

## **Select appropriate varieties for the average chill hours in your region.**

Many fruit trees need a specific number of "chilling hours" (temperatures between 32°F - 45°F). Trees that do not receive their proper amount of chill hours during the winter may experience delayed foliation or have problems flowering and forming fruit.

The number of necessary chill hours for fruit trees will vary by variety. For example: an "Anna" Apple has a low chill factor requiring only 200 hours, while the "Gravenstein" Apple needs 700 cumulative chill hours to fruit well. Most of Northern California receives between 800 and 1,500 hours of chill each winter. Southern California may only receive 100-400 hours.

## **Plant your tree in an area with good drainage.**

Shallow, poorly drained sites will produce small, weak plants that have lower yields, more pest problems, and require special water management practices. Notice where water accumulates or puddles in the winter and avoid planting trees in those areas.

# Fruit Trees and Vines for California School Gardens

*(listed in order of fruiting season)*

<b>Fruit Name</b> <small>* These trees require minimal pruning and maintenance expertise.</small>	<b>USDA Zone</b>	<b>Best Time To Plant</b>	<b>Harvest Time</b> Dates may vary by variety	<b>Tree Height</b> Tree height varies by rootstock and pruning	<b>Evergreen or Deciduous</b>
Pear	5-8	Best to plant from bare root tree in winter	Summer - Fall	Dwarf height 8-10 ft, Standard 30ft	D
Apples	5-9	Best to plant from bare root tree in winter	Summer - Fall	Dwarf height 8-12 ft, Semidwarf 12-18 ft Standard 18-22ft	D
Grapes	4-8	Best to plant from bare root tree in winter	Summer - Fall	10-15 ft vine, Grow on trellis or fence	D Vine
Pineapple Guava *	7-10	Fall As container plant, can plant year round	Fall - Winter	4-12 ft	E
Kiwi Fruit	8-10	Fall, can plant year round, need male and female for fruit production	Fall - Winter	15 -25 ft vine, Grow on trellis or fence	D Vine
Almond	7-9	Best to plant from bare root tree in winter	Fall	12-15 ft	D
Walnut	4-9	Best to plant from bare root tree in winter	Fall	20-50 ft	D
Pomegranate *	7-11	Best to plant from bare root tree in winter	Fall - Winter	5-12 ft	semi - D
Persimmon *	7-10	Best to plant from bare root tree in winter	Fall - Winter	12-18 ft	D
Citrus *	8-11	Fall Container plant, can plant year round	Late Fall - Spring depending on variety	6-25 ft , depending on variety	E
Cherries	4-8	Best to plant from bare root tree in winter	Early Spring	10-30 ft	D
Apricot or Aprium	4-8	Best to plant from bare root plant in winter	Late Spring - Summer	12-20 ft	D
Fig *	7-11	Fall Container plant, can plant year round	Spring and Fall, depending on your region	15-30 ft	D
Raspberries *	3-9	Best to plant from bare root tree in winter	Late Spring – Fall, depending on variety	4-6 ft	D
Plum or Pluot	4-8	Best to plant from bare root plant in winter	Late Spring - Summer	15-40 ft	D
Blackberries *	5-8	Best to plant from bare root plant in winter	Summer - Fall	3-6 ft	D

# Introduction to Annual and Perennial Plants

*Nature does not hurry, yet everything is accomplished.*  
-Lao Tzu

## ***What are Perennial Plants?***

Perennial plants are plants that last two or more seasons. Perennial plantings serve as a foundation for your school garden and can have various purposes such as:

- ❖ attracting wildlife and providing habitat for beneficial insects (pollinators and predators) both of which connect to science content
- ❖ food production (herbs, fruit trees, shrubs, and vines)
- ❖ medicinal uses (teas, tinctures, salves, and balms)
- ❖ ornamental uses (dried floral crafts, cut flowers)
- ❖ providing year round color and foliage
- ❖ providing year round plant material for studying and projects

Perennial plants are usually easier to maintain than annual vegetable crops and, once planted, perennials provide a place of beauty and interest for years to come.

There are many considerations to take into account when selecting perennials:

- ❖ Evergreen vs. deciduous: Do you want a plant that stays green all year or one that drops its leaves in winter?
- ❖ Flowering/fruitle months and colors: It makes most sense to choose plants that will fruit or flower when school is in session.
- ❖ Size and structure: Will the mature size of the plant fit properly in the space available?
- ❖ Uses of plants: Will they be for culinary herbs, ornamental uses, medicinal uses, habitat, food production, special theme or study purposes?
- ❖ Light requirements: Will the plant receive the appropriate amount of light throughout the year?
- ❖ Appropriate climatic zones: Will the plant survive your winter cold?

## ***Climate Zones for Perennial Plants***

To determine which plants are suitable for a climate zone, gardeners refer to hardiness charts or “climate zones.” There are two zone charts that are commonly used in the western region:

- ❖ USDA Zones
- ❖ Sunset Western Garden Zones

The USDA Zones range from 1-13, with **1** being the coldest and **11** being the warmest. In California most locations fall between zones **7-10**.



The Sunset Garden Zones are similar to the USDA Zones, but are more detailed allowing for a more specific match of a plant's ideal environmental preferences and a location's climate. There are 24 Sunset zones and the *Sunset Western Garden Book* is an indispensable resource that lists thousands of plants, their zones and growing information for the Western US.

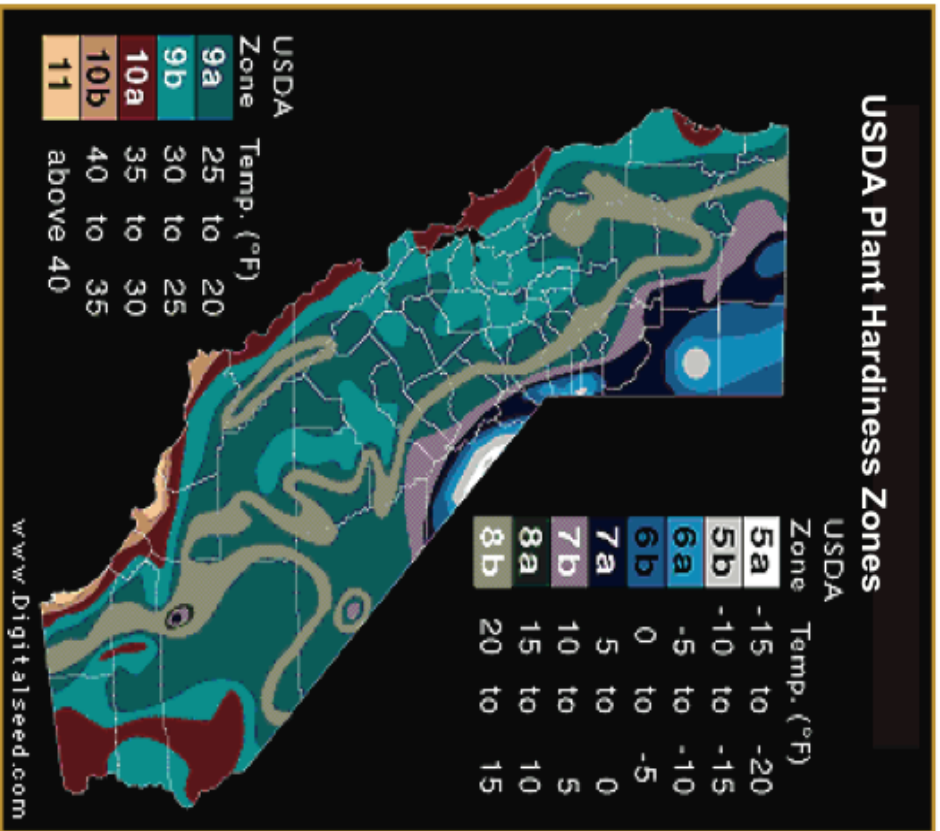
To determine your specific zone, ask a local nursery professional, contact your County Master Gardener ([www.mastergardeners.org](http://www.mastergardeners.org)), or view the "Know Your Zone" maps on the following page. To find out what zone a particular plant will thrive in, refer to the plant label, your nursery professional, or a resource such as the *Sunset Western Garden Book*.

### **Here are a few more points to consider when planting perennials:**

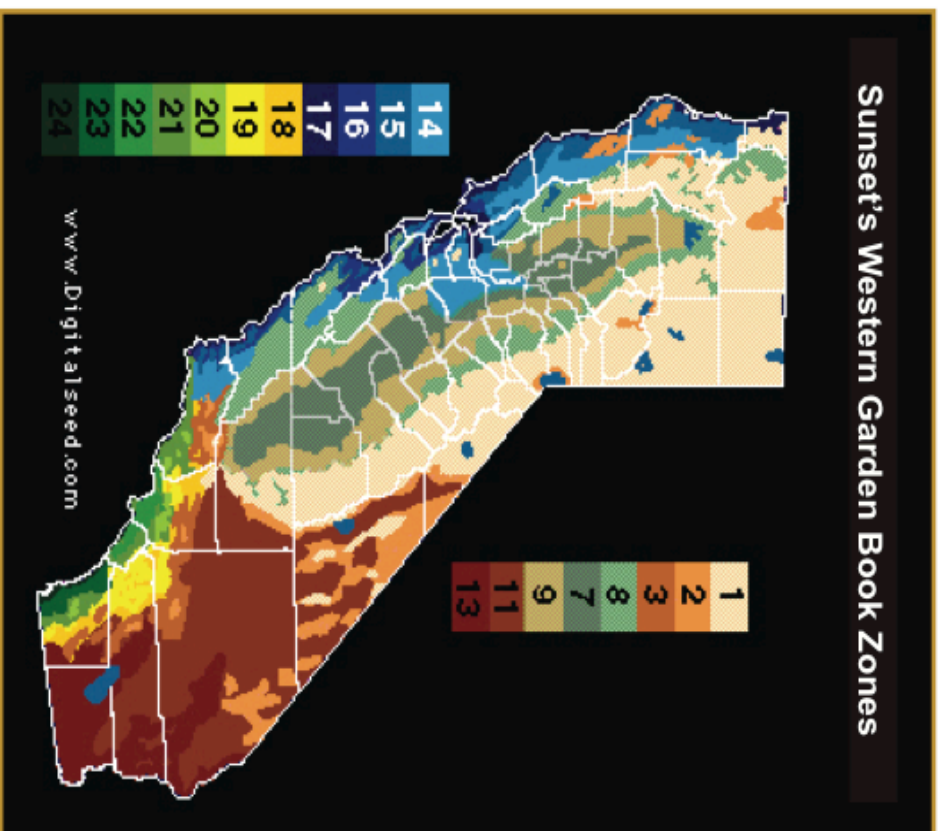
- ❖ “Herbaceous” perennial plants die back to the ground in the winter and re-grow in the spring. “Woody” plants maintain their branching structure during the winter and may be evergreen or deciduous. “Evergreen” perennials keep their leaves during the winter. Keep these characteristics in mind when planning your garden's design.
- ❖ Evergreen perennials can be planted any time of the year, but often the best time of year is in the fall. This allows plants root systems to get established before their growing season and to take advantage of winter rains.
- ❖ Bare root perennials such as fruit trees and vines should be planted in the dormant season (winter or late winter months if your ground is frozen).
- ❖ Most bulbs are planted in the fall for spring blooming dates; they are a great option for school gardens.

## Know Your Zone

Cold tolerance or "plant hardiness" is an important consideration when selecting plant varieties for your garden. There are two commonly used climate zones used to gauge temperatures in a particular area. The USDA has established plant hardiness zones for the country. When selecting plants it is important that the plant is suitable for your zone. Zone information for plants can often be found on plant labels or from nursery staff. Sunset's Western Garden Book has created their own zone. Keep that in mind when using their books in garden planning.



[http://www.digitalseed.com/gardener/climate/usda\\_zones.html](http://www.digitalseed.com/gardener/climate/usda_zones.html)



[http://www.digitalseed.com/gardener/climate/plantclimate\\_zones](http://www.digitalseed.com/gardener/climate/plantclimate_zones)

## What are Annual Plants?

Annuals plants are plants the live their whole life cycle (from a planted seed to a mature plant that flowers and fruits and makes a seed again) in a year or less. Annual plants make up most of our vegetable crops, and most of them can be harvested within 2 to 3 months after sowing. Bi-annual plants are similar to annuals but they may live up to two years before coming to the end of their lives.

Annuals are generally classified as either “warm season” or “cool season” crops.

- ❖ **Cool season crops** thrive in cool areas or during cooler months of the year.
  - Generally they are the root, stem, leaf, and flower bud crops.
  - Many of these crops can “over winter” in mild winter areas if planted in the fall, or can be planted in early spring for a late spring harvest.
- ❖ **Warm season crops** thrive in warm areas or during the hotter months of the year.
  - Generally they are the fruit and seed crops.
  - They are often planted in mid-late spring to summer and harvested in the summer and fall.

## School Year Planting Options

Cool Season Crops		Warm Season Crops	
<ul style="list-style-type: none"> <li>• <b>Late Summer/Fall Planting</b> Harvest late-fall through winter.</li> <li>• <b>Early Spring Planting</b> Harvest before school ends.</li> </ul>		<ul style="list-style-type: none"> <li>• <b>Late Spring (or Summer*) Planting</b> Harvest when returning to school in fall. (Have a plan in place for summer weeding, watering, and harvest.)</li> </ul>	
Best to sow directly into Garden Beds	Best to plant transplants into Garden Beds	Best to sow directly into Garden Beds	Best to plant transplants into Garden Beds
Beets Calendula (edible flower) Carrots Garlic Nasturtium (edible flower) Onions Peas Radish Spinach	Asian Greens Broccoli Cabbage Cauliflower Chard Collards Kale Kohlrabi Lettuce Nasturtium (edible flower) Onions	Amaranth Corn Cucumbers* Melons Popcorn Potatoes Pumpkins Shelling Beans Snap Beans* Summer Squash* Sunflowers (with edible seeds) Winter Squash	Eggplant Onions Peppers Tomatoes

# Average Last (Spring) and First (Fall) Frost Dates in California Cities

From [www.victoryseeds.com/frost/ca.html](http://www.victoryseeds.com/frost/ca.html)

City	Last Frost	First Frost
Auburn	4/13	11/14
Alturas	7/16	8/9
Bakersfield	3/3	11/20
Barstow	4/15	10/29
Berkeley	1/19	12/26
Bishop	5/25	9/26
Blythe	3/1	11/28
Boca	8/5	7/29
Burney	7/15	8/12
Chico	4/23	10/30
Death Valley	2/11	11/30
Eureka	3/14	11/15
Escondido	3/30	11/12
Fairfield	3/27	11/11
Fresno	4/1	11/7
Klamath	4/27	10/28
Livermore	4/27	11/3
Lodi	3/31	11/2
Lompoc	4/11	11/7
Long Beach	2/11	12/8
Los Angeles	2/11	12/8
Marysville	3/16	11/14
Mineral	7/14	8/7
Modesto	3/28	11/10
Monterey	2/11	12/11
Mt. Shasta	6/13	9/12
Napa	4/28	11/9
Needles	3/2	11/30
Nevada City	6/4	9/24

City	Last Frost	First Frost
Ojai	4/9	11/5
Orick	5/18	10/4
Orland	4/15	11/8
Oxnard	2/9	12/24
Palmdale	5/2	10/27
Palm Springs	3/6	11/18
Palo Alto	3/30	11/9
Pasadena	2/3	12/13
Paso Robles	4/18	10/7
Petaluma	4/25	11/5
Pismo Beach	3/11	12/1
Placerville	5/18	10/22
Pomona	4/1	11/16
Red Bluff	4/2	11/14
Redding	5/10	10/31
Sacramento	3/23	11/14
San Diego	3/30	11/12
San Francisco	1/24	12/8
San Luis Obispo	3/27	11/22
Santa Barbara	2/26	12/4
Santa Rosa	5/1	11/5
Tahoe City	6/30	8/22
Tulelake	7/6	8/14
Ukiah	4/29	10/25
Upland	4/14	11/21
Visalia	3/17	11/8
Willows	4/23	11/8
Yreka	5/31	9/25

## Plant Hardiness Definitions

From [www.digitalseed.com/gardener/climate/hardiness.html](http://www.digitalseed.com/gardener/climate/hardiness.html)

**Hardy** Not injured by light frosts and seed will germinate at rather low temperature. May be planted about two weeks to a month before the average date of the last killing frost in the spring. In general, these plants can safely be planted as soon as the soil can be worked into condition. **Includes: onion sets, smooth peas, cabbage plants (well-hardened), kale, kohlrabi, Brussels sprouts, spinach, turnip, radish, asparagus, rhubarb.**

**Half-Hardy** May be planted about the time of the last killing frost. The seeds of this group will germinate at rather low temperatures, but the young plants are injured by frost. **Includes: lettuce, beet, carrot, chard, parsley, parsnip, heading broccoli, early potatoes, onion seeds, garden peas, celery plants, cauliflower plants.**

**Tender** Injured by light frost and does not thrive at low temperatures even though frost does not occur. These shouldn't be planted until all danger of frost is past. **Includes: snap bean, tomato, sweet corn, sweet potato.**

**Very Tender** Does not thrive until the soil has become warm and the seed will rot in the ground unless the soil is warm. **Includes: eggplant, pepper, cucumber, watermelon, muskmelon, lima bean, squash, pumpkin.**

## ***Planting Annual Plants***

Gardeners use planting charts (for an example, see *Gardens for Learning* pages 65-68) or the information found on seed packets to determine when to plant annual plants. Most planting charts and seed packets refer to weeks before or after average frost dates as a guide for when to sow seeds or plant (set) transplants outdoors.

The “average last frost date” of the season lands in the late winter or spring. The “average first frost date” lands in the fall or early winter. Planting charts and seed packets will usually instruct you to plant seeds directly into the garden or transplant seedlings a certain number of weeks before a first frost and before or after a last frost.

Contact your local Master Gardeners (found at [www.mastergardeners.org](http://www.mastergardeners.org)) or a local nursery professional, or use *Creating and Sustaining Your School Garden's "Average Last and First Frost Dates in California Cities"* to find out your region's frost dates.

## ***Planning Your School's Edible Harvest***

One of the most challenging aspects of planning a school garden harvest is that most crops are ready for harvest in the summer months, when schools are out of session. With a bit of planning, however, you can create a crop harvest schedule that fits with your school year.

Crop planting charts and seed packets list the “Days to Harvest” of the crop that you are planting. The days to harvest are an approximation of how many days it will take for your plant to go from a newly sown seed to an edible treat. Planning your sowing and harvest dates is as simple as selecting seasonally appropriate crops and noting the days to harvest of the particular crop. Of course there are many other variables like the weather, irrigation, fertilization, and pests that may accelerate or retard a plant's growth, but all of those variables are learning opportunities for gardeners. View the *Creating and Sustaining Your School Garden Crop Harvest Planning Chart* for specifics on planning a school year harvest.

Once you have chosen which crops to plant, read the *Creating and Sustaining Your School Garden Vegetable Planting and Harvesting Tips*, or refer to an online planting guide at [www.csgn.org/crop-planning](http://www.csgn.org/crop-planning) to learn more about growing and harvesting your crops.

## ***Planning a Fall Harvest***

One mistake many new school gardeners make is planting a garden that matures during summer while students are away. In order to plant vegetables that are ready to harvest in the fall, plant longer “days to harvest” vegetable varieties and plant them in the late spring or early summer. Read the “days to harvest” listing on the back of seed packages and plan accordingly.

Another suggestion is to plant crops that can dry in the garden like popcorn, winter squash (pumpkins), or shelling (dry) beans. Popcorn can dry in the field for weeks once mature, whereas sweet corn needs to be harvested within a week or two for a tasty harvest. Also remember that many fruiting vegetables need to be harvested to keep producing throughout the summer, so make sure your summer garden guardians harvest regularly to encourage continual fruiting.

Try planting some of these crops in late May or June and come back to school with something to harvest.

Shelling Beans (dry beans)	Peppers
Sunflowers (Edible or Birdseed)	Eggplant
Winter Squash	Melons
Popcorn	Tomatoes
Pumpkin	Parsnip
Potatoes	Health Master Carrots
Amaranth	

### ***Edible Theme Gardens***

Many successful school garden programs have learned that planting an edible theme garden is a good way to pique students' interest, grow healthy food and connect to the classroom via cultural studies. For example, the Native American **Three Sisters Garden** demonstrates the interdependence of corn (which uses nitrogen added to the soil by the beans), beans (which grow up the corn stalks), and squash (which covers the ground and reduces weed growth). Another popular example is a **pizza garden**, in which everything needed to make a pizza can be grown (add a statue of a cow to represent the source of cheese and a pig the "pizza meat" animal).



# Crop Harvest Planning Chart

*Plant carrots in January and you'll never have to eat carrots.*

~ Author unknown

## Average Frost Dates

Most seed packets and planting guides recommend the number of weeks to plant or transplant (set out plants) before or after the average first or last frost date in your area. Refer to the average frost date chart and write your average frost dates below:

<b>Last Frost (Spring):</b>	<b>First Frost (Fall):</b>
-----------------------------	----------------------------

## 2012

January							February							March							April									
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa			
1	2	3	4	5	6	7				1	2	3	4				1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	9	10	11	12	13	14	5	6	7	8	9	10	11	4	5	6	7	8	9	10	8	9	10	11	12	13	14			
15	16	17	18	19	20	21	12	13	14	15	16	17	18	11	12	13	14	15	16	17	15	16	17	18	19	20	21			
22	23	24	25	26	27	28	19	20	21	22	23	24	25	18	19	20	21	22	23	24	22	23	24	25	26	27	28			
29	30	31					26	27	28	29				25	26	27	28	29	30	31	29	30								

May							June							July							August						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5						1	2	3	1	2	3	4	5	6	7				1	2	3	4
6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14	5	6	7	8	9	10	11
13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21	12	13	14	15	16	17	18
20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28	19	20	21	22	23	24	25
27	28	29	30	31			24	25	26	27	28	29	30	29	30	31					26	27	28	29	30	31	

September							October							November							December						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
					1		1	2	3	4	5	6	7				1	2	3	4						1	
2	3	4	5	6	7	8	7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8
9	10	11	12	13	14	15	14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15
16	17	18	19	20	21	22	21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22
23	24	25	26	27	28	29	28	29	30	31				25	26	27	28	29	30	23	24	25	26	27	28	29	
30																					30	31					

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## Planning Planting and Harvest Dates

1. Review the school year planting options list for a summary of school year planting/harvest windows.
2. With your average frost dates noted refer to a seed packet or planting guide for more specific details on when to plant.
3. Use a seed packet or planting guide to find the **number of days until harvest**. "Days to Harvest" are based on the day that the seed is first put into soil (container or direct sown).
4. Chose a crop and fill out the chart below selecting a harvest date when school is in session.

Crop	Planting Date	Number of Days to Harvest	Target Date for Harvest
<i>Example: Lettuce</i>	<i>March 10<sup>th</sup></i>	<i>50 days from direct seed</i>	<i>May 30<sup>th</sup></i>

Keep in mind the weather and a number of other factors can affect the number of days to harvest. If you are planting a transplant, you can subtract about 20-30 days off the "days to harvest" found on seed packets and planting guides. Note: some seed packets (such as tomatoes and peppers) state the days to harvest from setting out a transplant.

# Vegetable Planting and Harvest Tips

Taken from *The Growing Classroom*

## Beans, Bush

- Keep sowing every 2 weeks for constant supply of beans. Plants may stop producing beans during extreme heat but will begin again when temperatures decrease.
- Pick beans before you can see bean swelling in pod. Be sure to pick beans frequently (3-5 days) so the crop keeps producing.
- Sensitive to transplanting, consider sowing directly in garden.
- Eat raw, steamed, boiled, or pickled in vinegar.

## Beans, Pole

- A pole bean is a climbing variety and needs support of a pole, trellis or fence to grow.
- Pole beans often produce for a longer period than other beans.
- Pick beans before you can see bean swelling in pod.
- Pick beans frequently (every 3-5 days) for continual harvest.
- Sensitive to transplanting, consider sowing directly in garden.
- Eat raw, steamed, boiled, or pickled in vinegar.

## Beans, Shelling

- Shelling beans are grown until the bean and pod is dry. Let the beans completely dry on the stem before harvesting.
- Place dried bean pods on tarp and have kids stomp on them to remove pod or place in sack and strike sack to break beans from shell. Some kids like to hand shell each pod.
- These beans need to be boiled to eat.

## Beets

- Sow seed directly in garden every 10 days for continual harvest.
- Thin plants when they are young.
- When beets are 1-2.5 inches in diameter, pull the roots.
- Beets will get woody when overly mature. Beets will keep in ground during frosts.
- Eat raw, pureed, baked, steamed, boiled, or pickled in vinegar. Beet greens may be cooked like spinach.

## Broccoli

- Broccoli is a cool season crop that grows best in full sun.
- Pick broccoli when heads form into tight, firm clusters.
- Cut off the head with 6 inches of stem attached. Side heads will form after first head is cut.
- Eat florets and stems raw, boiled, or steamed.

## Brussels sprouts

- Plant Brussels sprouts in spring for a fall harvest. Exposure to frost improves flavor and sweetness.
- To harvest, twist sprouts off the stem when 1.5" wide and start with lower ones first. Remaining sprouts will keep on plants through part of winter.
- Eat boiled or baked.

## Cabbage

- Plant in mid-summer for a fall harvest. In mild areas sow in fall for a early spring harvest.
- Harvest cabbage heads when they have formed tight, firm heads.
- Eat raw, boiled, steamed, or pickled as sauerkraut.

## Carrots

- Sow seed directly in the garden. Thin crowded plants when small.
- Harvest carrots at almost any time in the growth cycle. Carrots will keep in the garden after the first frost, right up until ground freezes in winter.
- If needed, loosen carrots with digging fork before pulling.
- Eat raw, boiled, steamed, baked, pureed, or pickled in vinegar.



### **Cauliflower**

- Tie outer leaves around head to protect cauliflower from the sun.
- Cauliflowers are cool season crops that are ready to harvest when the flowerets are tightly formed and dense. Cut the head off the main stem.
- Eat raw, cooked, boiled, or pureed.

### **Celery**

- Requires a lot of nutrients and water.
- Harvest after the stalks have reached a foot or more.
- The inner stalks are more tender and taste best uncooked.

### **Chard**

- Cut the outer leaves close to ground when 8-10" tall. Make sure to leave 4-6 leaves on the plant so it can continue to grow.
- Refrigerate chard for up to two weeks.
- Cook by boiling, steaming, or stir-frying.

### **Corn (sweet)**

- Sensitive to transplanting, consider sowing directly in garden.
- For good pollination plant in blocks at least 4 feet by 4 feet.
- Ears are ready to harvest about 20 days after the silks appear or when they turn brown.
- Peel back the husk to and puncture a kernel with your fingernail. If the kernels are fat and juice is milky - white, the ear is ready for eating.
- Eat raw, steamed, or boiled.

### **Corn (pop)**

- Sensitive to transplanting, consider sowing directly in garden.
- Do not plant sweet corn in same garden with popcorn; the quality of sweet corn will be reduced if cross-pollinated by popcorn.
- Allow the kernels to dry in field as long as possible before winter rains.
- Harvest kernels when hard and the husks dry. Remove the husks and place the ears in mesh bags and hang in a warm, dry location.
- Once a week, shell a few kernels and try popping them; when test kernels are popping well store ears in cool dark dry place or remove kernels and store in airtight containers.

### **Cucumbers**

- Mound soil into hills; plant 3 seeds per hill.
- Try growing cucumbers vertically on a trellis to increase air circulation and sunlight.
- Cucumbers are tastiest when harvested young before the seeds fully develop.
- Harvest lemon cucumbers when they are light green with just a blush of lemon color.
- Eat raw or pickled

### **Eggplant**

- In northern gardens where growing season is short, start with large transplants.
- Eggplant may develop a bitter flavor when grown in stressful conditions. Pick them while the skins are glossy and before seeds form inside.
- Cut stem, rather than pull from plant.
- Soak eggplant in water for 15 minutes or salt and let sit before cooking to reduce bitterness. Eat baked, pureed, stuffed, or roasted.

### **Garlic**

- Harvest when half to three-quarters of the leaves turn yellow - brown.
- Remove flower stalks to encourage efficient bulb growth.
- Loosen soil beneath bulb before pulling.
- Tie garlic together in bundles of 6 to 10 bulbs; hang them for four to six weeks in shaded, dry, area to cure.
- Mince and use in any dish as flavoring.

### **Kale**

- Pluck leaves of kale on the outside of plant when leaves are 10" or longer.
- To keep the plants in production, avoid cutting center bud or leaves. Frost enhances the flavor.
- Eat pureed, boiled, steamed, or baked in a casserole.

### **Kohlrabi**

- For best texture, harvest kohlrabi bulb when it reaches 2-3 inches in diameter. Bulbs become tougher as they grow and age.
- Pull or slice at base. Bulbous stem and leaves are edible, peel off skin around bulb before eating.
- Eat raw, steamed, boiled, or pureed.

### **Leeks**

- Plant transplants when 4" high.
- Harvest leeks when they are about 1 inch in diameter and before they make their flower stalk.
- Slice open lengthwise and rinse inner leaves.
- Eat in soups, salads, baked dishes, or as a substitute for chive.

### **Lettuce**

- Lettuce prefers cooler weather, in hot weather plant lettuce may go to seed prematurely (bolting).
- Harvest outer leaves of leaf lettuce early to encourage growth.
- Head lettuce is ready to harvest when heads are firm and tight.

### **Melons**

- Sensitive to transplanting, consider sowing directly in garden. Melons grow best in hot weather. Harvesting the perfectly ripe melon is not always easy, refer to seed packet information for particular varieties.
- **Cantaloupes:** Pick when heavy and tan. Look for "netting" that is hard and raised and a crack that forms around the stem where it touches the fruit. The stem should slip easily off the vines with a quick pull, but should not have fallen off by itself.
- **Honeydews:** Should have a slight yellow blush and get a bit softer on at the blossom end.
- **Watermelons:** Develop a dull green cast and have a light patch at the bottom that changes from green to light yellow when mature. Also, the leaf on the tendril nearest the fruit turns brown and withers. The skin should be hard, difficult to pierce with a fingernail.
- Eat right in the garden for ultimate satisfaction.

### **Onion**

- Harvest when tops fall over and tips of leaves start to turn brown.
- Pull onions, shake off any soil, but do not wash them or pull off outside wrapper leaves. Store in dry area to cure for about a week.
- Use raw, blanched, sautéed, baked, or just about any dish.

### **Parsley**

- Long germination and growth period.
- Soak seeds over night before planting.
- Harvest parsley as soon as plants are growing vigorously.
- Snip outer stems from plants; they will produce new growth.
- Parsley dries and freezes well. Can be eaten dried or fresh.

### **Peas**

- Sensitive to transplanting, consider sowing directly in garden. Harvest peas daily to encourage vines to keep producing.
- **Shelling Peas:** Pick them when the pods are rounded and the peas have filled in pod, but before they get tough. Pods are not edible.
- **Snap Peas:** Pick when their edible pods begin to grow rounded, plump and juicy, but before they get tough.
- **Snow Peas:** Pick them when the pods have grown to 2-3 inches but are still flat.
- Eat raw, boiled, steamed, or stir - fried.

### **Peppers**

- Sensitive to cold and harsh sun. In extreme heat, shade peppers by planting in a dense block.
- Peppers are edible when they're green, but most don't develop full flavor and mineral content until they turn from green to orange, yellow, or red.
- Eat raw, baked, stuffed, or sautéed

### **Potatoes**

- When foliage starts to wither and die, the tubers should be fully grown and ready to harvest in a couple of weeks. Let soil dry down a bit to help cure potato skin and dig up with a spading fork before first frost. Do not wash potatoes before storing; rather just brush off dirt.
- Potatoes that are nicked or bruised during harvest don't store well, so eat as soon as possible.
- "New potatoes" can be harvested before the plant begins to die back. New potatoes should be washed and eaten shortly after harvest.
- Always cook potatoes, the raw starch is mostly indigestible. Boil, steam, or bake. Leaves are not edible.

### **Pumpkin**

- Pumpkins prefer to be sown directly from seed in hills, 3 - 4 seeds per hill. Leave plenty of room for vine sprawl (6 feet for bush types and 10 to 12 feet between vining sorts).
- Do not pick pumpkins until the vine begins to turn brown and dry. Then cut vine 3 - 4 inches above pumpkin.
- Leave pumpkin in sun for a week or two to cure. Eat baked, boiled, or pureed. It is easiest to remove pumpkin flesh from skin after baking.

### **Radish**

- Sow seed directly in garden every 10 days for continual harvest.
- Spring radishes should be checked frequently because of quick maturation. Will get woody when over-mature. Pull radish roots when 1-2 inches in diameter.
- Eat raw, stir-fried, or pickled in vinegar.

### **Spinach**

- Sensitive to transplanting, consider sowing directly in garden.
- Plant every two weeks for continual harvest.
- Harvest larger outer leaves early in morning when crisp, or cut whole plant at base.
- Keep cool. Will "bolt" and go to seed in hot weather.
- Wash well. Eat raw, pureed, stir-fried, steamed, boiled, or in baked dishes.

### **Squash, Summer**

- Sensitive to transplanting, consider sowing directly in garden.
- Pick frequently when fruits are small. Skins should be tender enough to poke fingernail through.
- Pick zucchini no larger than 6-7", patty pan squash at 2-3", and round zucchini at 3-4".
- Skin can be eaten along with the inside. Eat raw, boiled, baked, roasted, or in soups.

### **Squash, Winter**

- Sensitive to transplanting, consider sowing directly in garden.
- Grow throughout the season and harvest when plant materials die back in fall and the squash skin is hard.
- Most winter squash store well. After harvest, store in cool dry.
- Eat boiled, baked, steamed or pureed in soups. It is easiest to remove squash flesh from skin after baking.

### **Tomatoes**

- Prefers warm weather although nighttime temperatures over 90 degrees can prevent fruiting.
- Harvest when fruits are full color.
- Eat raw, stuffed, stewed, boiled, baked, or pureed. Leaves are not edible.
- Great crop to comparative taste fresh vs. store bought.



## **My Plate, My Garden**

**Recommended Grade Level:** 3-8

### **Description:**

In this lesson, students learn to categorize foods into five food groups: vegetables, fruits, grains, protein, and dairy. They look for real and illustrated examples of these groups in the garden. As they find examples, students draw them onto plates divided proportionally according to how much of each food is recommended to constitute a balanced meal.

### **Background:**

The USDA considers vegetables, fruits, grains, protein (meat/beans), and dairy (milk products/calcium-fortified soy milk) to be "the building blocks of a healthy diet." The My Plate graphic demonstrates the proportions of each of these food groups recommended by the USDA for a balanced diet.

### **Materials:**

- Food Card Pictures, models or real examples of foods from each food group
- 1 blank My Plate worksheet for each student
- Crayons or colored pencils

### **Preparation:**

1. Copy Food Card Pictures and cut out each one. Copy onto cardstock or laminate for durability.
2. Look around your garden for various food groups growing. In addition to fruits and vegetables, you may have grains, such as wheat, or proteins, such as beans, nut trees or even chickens or eggs.
3. For any food groups not represented, scatter various Food Card Pictures or models in the garden. Reserve at least one sample card from each food group to show students in the class discussion.
4. Make a photocopy of the blank My Plate worksheet for each student.

### **Class Discussion:**

1. Show students My Plate and brainstorm a few examples of foods that belong to each group.

2. Ask a volunteer to share what he or she had for breakfast, and have students discuss which food groups were in it.
3. Shuffle a few food pictures and hand out to students. Together, classify each food within a food group. Start with simple foods, like apples, and then discuss a more complex food, like a sandwich or taco with meat and vegetables inside.

**Action:**

1. Hand out the My Plate worksheet and send students on a scavenger hunt in the garden to see if they can find as many examples as possible from each food group. When they find an example, have them draw it into that section of their My Plate worksheet.
2. Gather together and have students share all of the examples they found of foods from each food group. For any food that was not growing in the garden, ask where they might find that food growing.
3. Give students time to design their own, ideal balanced meals. *Your job is to design a meal that you would like, using appropriate amounts of food from each group. For example, I love spaghetti with meatballs, which give me grains and protein, so I'll draw those in these sections. Now I'm going to add tomato sauce and a salad with lots of beets, because those are all vegetables I like. I'll add sliced apple for my fruit.* Give students time to design and illustrate their own ideal, balanced meals.

**Tying it Together:**

Have students share their ideal, balanced meals. As they share, the class can provide any support they need to identify foods within each group that appeal to them.

**Digging Deeper:**






- Hand out Food Cards out to all students, and have them walk around and group themselves into balanced meals. Once they've grouped themselves, have them brainstorm a meal that would include those five things (i.e. sliced apples and carrot on a salad, yogurt dressing, chicken, and rice). Have each group share out their balanced meal.
- Have each student plan a day or week's worth of meals that include all of the food groups. You can find meal planning and tracking tools at [www.choosemyplate.gov](http://www.choosemyplate.gov).
- Grow fruits, vegetables, grains, and beans together with students in the garden and include them in classroom snacks. You can grow them in the shape and proportions of My Plate, and place a cow statue off to the side to represent the dairy group. For a sample plant list for the other four food groups, visit: <http://suite101.com/article/myplate-inspires-mygarden-a374463>

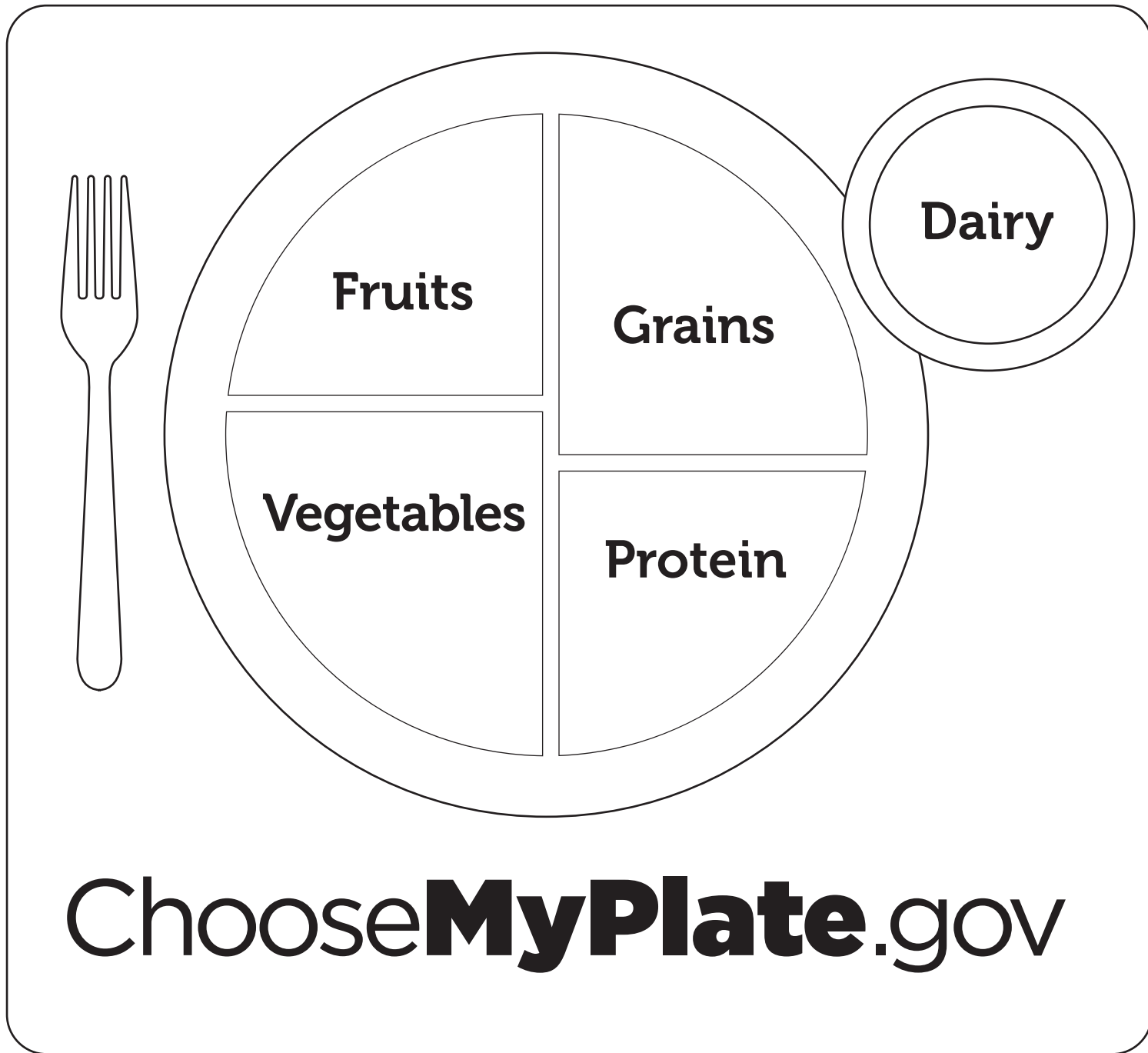
**California Health Standards:**

Grade 5 - 1.1.N. Describe the food groups, including recommended portions to eat from each food group.

Grade 7 - 1.8.N. Identify ways to prepare food that are consistent with current research-based guidelines for a nutritionally balanced diet.

### 5 Fantastic Food Groups: Food Group Pictures

 <p>Glass of 1% or skim milk</p>	 <p>Low-fat or fat-free cheese</p>	 <p>Low-fat or fat-free yogurt</p>
 <p>Lean meat</p>	 <p>Chicken (no skin)</p>	 <p>Bowl of beans</p>
 <p>Whole wheat bread</p>	 <p>Whole wheat pasta</p>	 <p>Whole wheat tortilla</p>
 <p>Apple</p>	 <p>Orange</p>	 <p>Grapes</p>
 <p>Tomato</p>	 <p>Green beans</p>	 <p>Lettuce</p>
 <p>Carrot</p>	 <p>Candy</p>	 <p>Bell pepper</p>
 <p>100% Fruit juice</p>	 <p>Oil</p>	 <p>Strawberry</p>
 <p>Rice</p>	 <p>Walnuts</p>	 <p>Peanut butter</p>



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