# Edible Plant Parts

## Grades 2-3

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## California Foundation for Agriculture in the Classroom

**Vision:** An appreciation of agriculture by all.

**Mission:** To increase awareness and understanding of agriculture among California's educators and students.



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## Special Thanks

The California Foundation for Agriculture in the Classroom (CFAITC) is dedicated to fostering a greater public knowledge of the agriculture industry. The Foundation works with K-12 teachers, community leaders, media representatives, and government executives to enhance education using agricultural examples in order to help young people acquire the knowledge needed to make informed choices. This unit update was funded by a grant from the Network for a Healthy California.

This unit, *Edible Plant Parts*, for grades 2-3, was created to foster an appreciation for agriculture, while teaching students about healthy eating habits, including a diet rich in fruits and vegetables. *Edible Plant Parts* has been aligned to the most current Content Standards for California Public Schools, including the Common Core and Next Generation Science Standards.

The Foundation would like to thank the people who helped create, write, revise, and pilot test *Edible Plant Parts*. Their comments and recommendations contributed significantly to the development of this unit. Their participation does not necessarily imply endorsement of all statements in this document.

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# Introduction and Unit Overview

## Unit Length

Nine lessons of varying length

## Objectives

*Students will:*

- Learn that people depend upon plants for food, fiber, shelter, fuel, and clean air
- Learn that all resources used by people and other animals ultimately come from the Earth
- Learn that fruits and vegetables are part of a healthy diet
- Taste various fruits and vegetables
- Understand that people get the energy they need from food
- Participate in a variety of activities designed to help them become effective listeners, speakers, readers, and writers
- Develop group interaction skills
- Develop an appreciation for California agriculture and the people who produce our food
- Classify, measure, and sort objects

Eating flowers at dinner? Serving stem and root hors d'oeuvres? These sound like unusual food dishes to say the least, but if you think about it, they are not so peculiar. Students will be fascinated to learn that when broccoli is served at dinner, they are eating flowers, and when celery and carrots are served with dip, they are eating stems and roots.

This unit, *Edible Plant Parts*, allows students and teachers to examine the six basic plant parts—roots, stems, leaves, flowers, fruits, and seeds—in a unique way. Through hands-on activities, students will learn about the different plant parts, as well as how to include fruits and vegetables into their daily meals as part of a healthy diet. Students will also learn about California agriculture and the people who produce our food.

The lessons can be used separately or together and may be taught in any order, however, it is recommended that the unit be taught in its entirety to fully address the concepts.

## Curriculum Content Standards

A concerted effort to improve student achievement in all areas has impacted education throughout California. California Foundation for Agriculture in the Classroom provides educators with numerous resource materials and lessons that can be used to teach and reinforce the Content Standards for California Public Schools, Common Core State Standards, and the Next Generation Science Standards. The lessons encourage students to think for themselves, ask questions, and learn problem-solving skills while learning the specific content needed to better understand the world in which they live.

The specific content standards addressed are listed on the sidebars of each lesson. A matrix chart showing how the entire unit is aligned with the standards is included on pages 69-75.

# Introduction and Unit Overview

## Key Vocabulary

A glossary of terms is located on pages 76-79.

Thank you for recognizing the importance of helping students understand and appreciate agriculture. We hope you find this resource useful in your teaching endeavors.

## Evaluation

This unit incorporates numerous activities and questions that can be used as evaluation tools, many of which can be included in student portfolios. With an emphasis on student inquiry, few lessons have right or wrong answers, but rather engage students in thinking critically about their learning experience and applying what they learn to real-life experiences.

## Bulletin Board Ideas

- Enlarge a photo of a plant with the six different plant parts. Label each part and provide a brief description of each plant part's function.
- Title a bulletin board "Do You Know What You Are Eating?" Divide the board into the six plant parts. Have students bring in pictures of edible plants and discuss with them where the pictures belong. Use the pictures to create a collage. Grocery store ads are a good source of fruit and vegetable photos.

# Why People Need Plants

## Purpose

The purpose of this lesson is to teach students that plants provide people with food, clothing, shelter, and many other things that we use in our daily lives.

## Time

*Teacher preparation:*
45 minutes

*Student activities:*
50 minutes

## Materials

*For the class:*

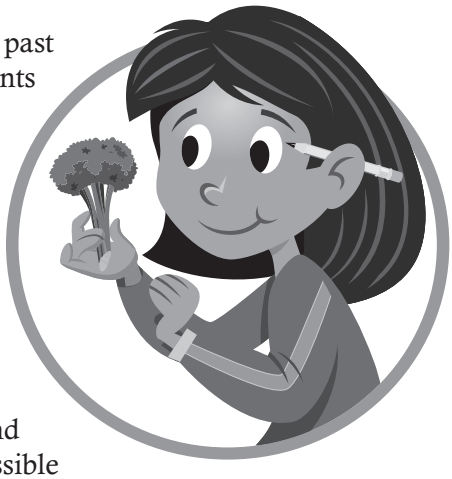
- Space to write on the board, chart paper, or butcher paper

*For each group of 3-4 students:*

- Cotton fabric or cotton ball
- Flower
- Fruit
- Maple syrup
- Granulated sugar packet
- Perfumed vegetable soap
- Vegetable
- Paper
- Wooden object.

## Background Information

Everything we eat and most of the things we use in our daily lives come directly or indirectly from plants. In addition to growing plants that we eat every day, farmers and ranchers grow plants that produce material we need, like fiber for clothing and wood for paper, pencils, and the homes we live in. California has a rich history in agriculture and continues to play a large role in feeding the people of our country. In fact, California is the largest food and agricultural economy in the nation.



Farming has changed a lot over the past one hundred years. Your grandparents or great-grandparents might have grown up on farms where their families raised much of their own food, but today most of us rely upon the 2% of people who live on farms in the United States to grow and produce food for the rest of us.

Modern technology, like tractors and irrigation systems, have made it possible for farmers to produce more food for more people on less land. In 1940, one U.S. farmer could produce enough food to feed 19 people and now, one U.S. farmer produces enough food to feed 155 people. One thing that has stayed the same, however, is that family farmers are still working hard to grow healthy and affordable food for all of us who don't live on farms.

## Procedure

### Part 1

1. Make space on the board or hang a piece of chart paper in front of the room. Ask students to help you make a list of things that people get from plants. List and discuss each item. Below is an example.
   - Food: vegetables, fruit, meat, eggs, dairy, etc.
   - Oxygen: plants make this through photosynthesis
   - Clothing: cotton jeans, flax, and rayon fabric

# Why People Need Plants

*For each student:*

- *People Need Plants* worksheet
- *Plants Around the Classroom* worksheet

## Content Standards

### Grade 2

**Science** 3e

**Next Generation Science** 2-LS2.A

**Health** 1.1N, 1.2N, 1.4N, 1.7N, 1.9N

**History Social-Science** 2.4.1

**English Language Arts**
- Writing 8
- Speaking and Listening 1a, 1b, 1c

### Grade 3

**History Social-Science** 3.5.1

**English Language Arts**
- Writing 8
- Speaking and Listening 1a, 1b, 1c

- Medicine: herbal teas, cancer treatment medicines developed from bark of the Yew tree, active ingredient in aspirin was developed from bark of willow tree, etc.
- Paper: from wood pulp
- Furniture: lumber from trees
- Cosmetics: plant dyes, plant oil fragrances, nut shell exfoliants in facial wash, etc.
- Energy sources: biofuel, firewood, etc.
- Shelter: lumber from trees and straw bales for homes

2. Review the list with students and emphasize that plants make up the base of the food chain by gathering sunlight energy and turning it into food for themselves and other living organisms. Ask students if we could go a day without plants. Refer to the list to reinforce the importance of plants. Instruct students to use their *Plants Around the Classroom* worksheet to make a list of everything they see that comes from a plant.

## Part 2

1. Organize students into groups of three or four.
2. Without telling the students the purpose of the lesson, distribute the following plant products to each group. To make the lesson more interesting, vary the items in each group.
   - Cotton fabric or cotton ball
   - Flower
   - Fruit
   - Maple syrup
   - Granulated sugar packet
   - Perfumed vegetable soap
   - Vegetable
   - Paper
   - Wooden object

3. Have the groups discuss the origin of each product. For example, the piece of wood came from a tree. Have the students discuss where each item would fit on their *People Need Plants* worksheet, and fill out the appropriate spaces.
4. After groups are finished, ask one group where they placed the vegetable soap on the chart and ask them where they think the soap came from. Continue in this fashion until you have called on each group and have discussed the origin and category for each item.

## Conclusion

Humans depend on plants for survival.

## Variation

- Instead of doing the worksheet in groups, fill it out as a class while the teacher holds up an example of each item on the list.

## Extensions

- Identify farmers in your community and have students write thank-you letters to them for providing the food that we eat. Ask the farmer to write back every month with a description of a few activities they are working on to produce their crops.
- Make a collage of things that come from plants.
- Have each student think of a plant from which we get at least three products, then share their information with a partner.
- Incorporate Agricultural Fact and Activity Sheets from CFAITC. *www.LearnAboutAg.org/factsheets*

## ELL Adaptations

- Model *Think, Pair, Share* by showing students what to do when you ask them to turn to a neighbor or group member and *Pair Share* by having one student say something like, "What part of the carrot do we eat?" and the other student would respond, "We eat the root of the carrot."
- When introducing new vocabulary words, show students an example of the object.

# People Need Plants

Name: _____

## We Use Plants For...

| Shelter | Food | Clothing | Other Things |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

# Plants Around the Classroom

Name: _____

## Instructions

Look around the classroom or your house. What objects come from plants? Make a list.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

# Dig 'Em Up

## Purpose

The purpose of this lesson is to review the functions of roots and to identify the roots of some plants as edible.

## Time

*Teacher preparation:*
20 minutes

*Student activities:*
One 45-minute session and three 10-minute sessions over a two week period to measure and record root growth

## Materials

*For the class:*

- Chart or butcher paper
- Markers
- Carrots, radishes, turnips, rutabagas, ginger, or parsnips *(preferably with the tops)*
- Knife and cutting board *(to be used by teacher)*

*For each student:*

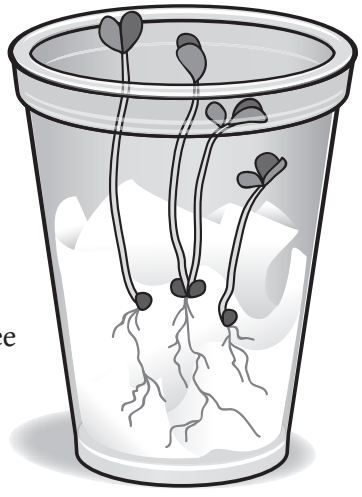
- One clear plastic cup
- One paper towel
- 3-5 radish seeds
- Water
- Centimeter ruler to measure root growth

## Background Information

Scientifically speaking, roots help anchor plants in the soil and take up water and nutrients that "feed" the plants and help them to grow. Some roots, such as beets, carrots, radishes, rutabagas, and turnips, also store sugars and starches. People eat these roots to obtain many of the essential nutrients they require for survival.

## Procedure

1. Post a large piece of chart paper in front of the room.
2. Check the students' understanding of the function of roots. Review that roots help hold the plant in place and take up water and nutrients from the soil. Write this information on the chart paper.
3. On the chart paper, brainstorm with the students to come up with a list of edible roots.
4. Display the selection of edible roots that you have brought in for the class to examine and assist the students in identifying them. Add any new edible roots to the list.
5. Using a clean cutting surface and knife, cut the washed roots into bite-sized pieces. Have students wash their hands and taste the vegetables.
6. Experiment: Create planters for observing radish seed growth. Give each student a clear plastic cup. Have students fold up a paper towel and place it inside the side of the cup. Have students pour just enough water into the bottom of the cup so that the water wicks up the paper towel. Once the paper towel is moistened all the way to the top, have students place three to five radish seeds between the paper towel and the side of the cup, about one inch from the top of the paper towel.



7. Observe the seeds daily. Every 4-5 days, measure root growth in centimeters with a ruler and record observations on the sheet provided.

# Dig 'Em Up

## Content Standards

### Grade 2

**Science** 2a, 2d, 2e, 4b, 4f, 4g

**Next Generation Science**
2-LS2-1

**English Language Arts**
- Writing 8
- Speaking and Listening 1a, 1b, 1c, 3

### Grade 3

**Mathematics**
Measurement and Data 4

**Science** 3a, 3d, 5c

**Next Generation Science**
3-LS3-2

**English Language Arts**
- Writing 8
- Speaking and Listening 1a, 1b, 1c

## Conclusion

The roots of some plants are edible. Although we can't see them, roots are a vital plant structure. Roots anchor plants in the ground, hold soil in place, and absorb water and nutrients from the soil.

## Extensions

- Have students go on a nature walk and pull weeds from school or home. Spread out and compare the various root types that were collected by the students. Discuss which are tap roots and which are fibrous roots and the differences between the two.
- As a class, read the book, *Tops and Bottoms* by Janet Stevens

## Variations

- Plant some cups with radish seeds and some cups with carrot seeds. Compare and contrast results.

## ELL Adaptations

- This lesson incorporates hands-on activities. Kinesthetic learning events provide an excellent learning environment for the English learner.
- Allow students to watch you set up the experiment and any variations prior to having students set up their own experiments. ELL students will benefit from observing the procedures before they get started.
- Model the *Think, Pair, Share* method: After seeing edible root vegetables, have students turn to a partner and say, "_____ are roots that we eat."

# Dig 'Em Up

Name: _____

## Observations

I planted a _____ seed.

| Drawing of my roots<br>____ days after planting | Drawing of my roots<br>____ days after planting | Drawing of my roots<br>____ days after planting |
|---|---|---|
| | | |
| Root measurement in centimeters = _____ | Root measurement in centimeters = _____ | Root measurement in centimeters = _____ |

# Snappy Stems

## Purpose

The purpose of this lesson is to review the functions of plant stems and to demonstrate that the stems of some plants are edible.

## Time

*Teacher preparation:*
20 minutes

*Student activities:*
One 60-minute lesson

## Materials

*For the class:*

- Butcher paper or chart paper
- Markers
- Jar
- Water
- Food coloring
- Stalk of celery with leaves

*For each group:*

- Plate of sliced celery to eat as a healthy snack
- Toppings for celery: Peanut butter, hummus, ranch dressing, cheese

*For each student:*

- 3-inch section of celery
- *Celery Stems* worksheet

## Background Information

Stems support leaves, flowers, and fruit. Liverworts, hornworts, and mosses are the only green plants that do not have stems. Stems can be very short, as in lettuce plants, or very tall, as in the trunks of redwood trees. Stems can be hollow, as in daffodils, or somewhat solid, as in tree trunks. Food produced in leaves through photosynthesis travels down the stems to the roots and fruits, while water and nutrients absorbed by the roots travel up the stems to other parts of the plant. Edible stems include celery, asparagus, bamboo shoots, rhubarb, and sugar cane. Other plant stems are also edible, such as broccoli and cauliflower, even though they are not necessarily grown for their stems.

Many interesting products come from stems. Granulated sugar is processed from the above-ground stems of sugar cane and sugar beets. Maple sugar is obtained from the trunks of maple trees. Cinnamon comes from the bark of trees in the *Cinnamomum* genus. Potatoes are special stems, called tubers, that grow underground.

## Procedure

1. Demonstrate the function of the stem *(vascular tubes that carry water and nutrients)* by putting a stalk of celery with celery leaves in a jar of water with food coloring. Examine the celery in food coloring after a day or two to see how the leaves have changed color as a result of the xylem carrying the food coloring and water up the stem.
2. Cut a new bunch of celery stems into three-inch pieces and give each student a piece. Have students separate the vascular tubes *(xylem and phloem)* from the celery pieces.
3. Discuss the functions of the vascular tubes that the students have separated from the celery stem *(transport food and water throughout the plant)*. Discuss the functions of the stem as a whole:
    a. Supports plants
    b. Transports water, food, and nutrients throughout the plant.
4. Have students go outside and observe a variety of stems on campus. Clarify with students whether or not you want them to pick the stems that they will be observing or simply observe them without picking the plant. Discover that stems come in all shapes and sizes.
5. Brainstorm types of edible stems that we eat.

# Snappy Stems

## Content Standards

### Grade 2

**Science** 2d, 3e

**Next Generation Science** 2LS4-1

**History-Social Science** 2.4.1

**Health** 1.7N

### Grade 3

**Science** 3a

**History-Social Science** 3.5.1

6. Celery potluck: In advance, ask students to bring tasty toppings to class. Examples include peanut butter, cheeses, hummus, dressing, and more. Discuss food allergies and wash hands before this activity. After the celery potluck, make a bar-graph on the board that shows which toppings were most popular.
7. Help students label the parts of a celery plant on their *Celery Stems* worksheet.

## Conclusion

Stems of certain plants are edible. Stems come in all shapes and sizes. Celery is a healthy snack.

## Extensions

- Do a class survey and calculate the percentage of students who prefer each type of celery topping.

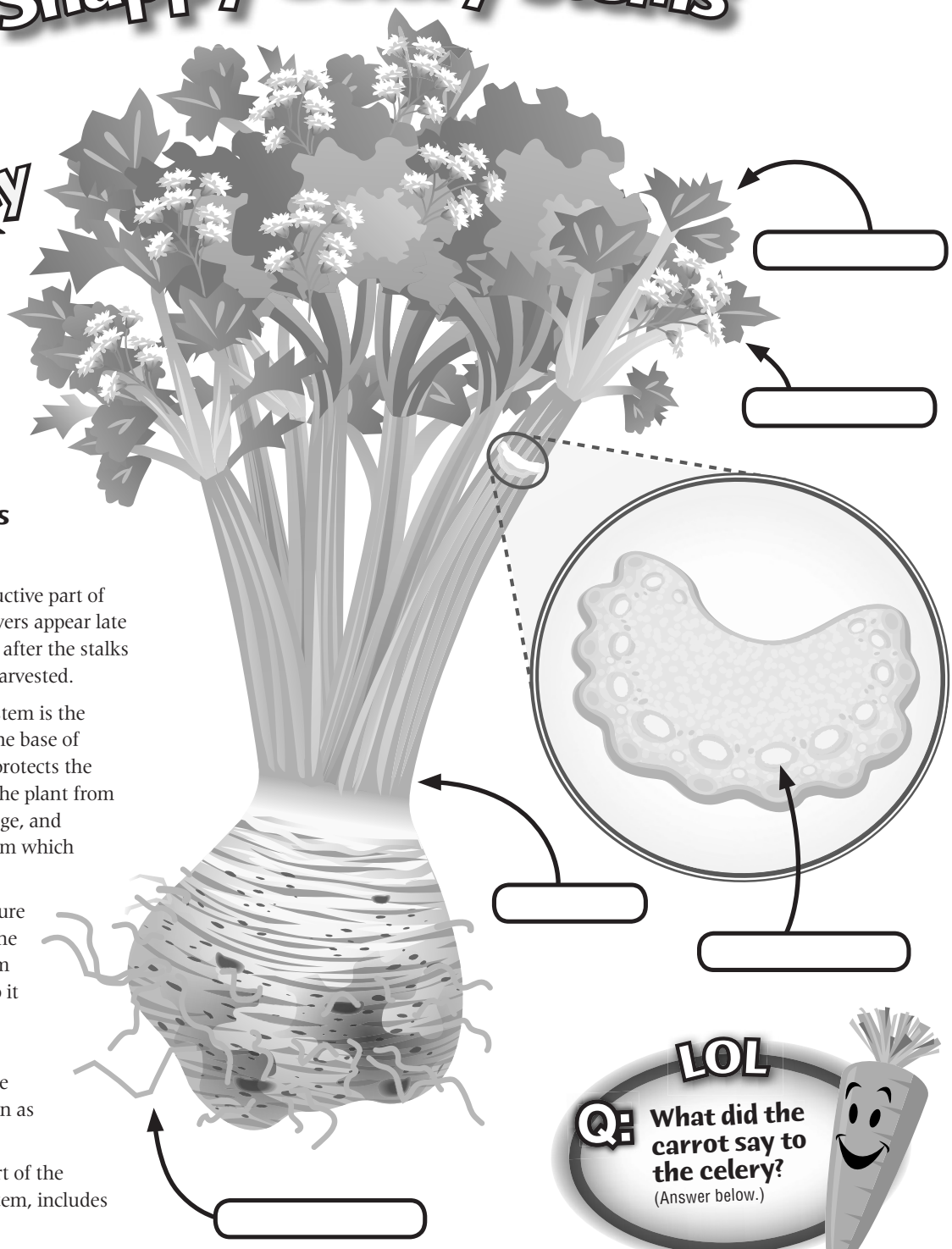
## ELL Adaptations

- This lesson incorporates hands-on activities. Kinesthetic learning events provide an excellent learning environment for the English learner.
- Demonstrate how to set up the experiment prior to allowing students to carry out their own experiments. ELL students will benefit from observing the procedures before they get started.
- Model the *Think, Pair, Share* method: After tasting celery with toppings, have students turn to a partner and ask, "What is your favorite topping for celery?" Their partner then replies, "My favorite topping for celery is _____."

# Snappy Celery Stems

## Activity

**Use the word bank to identify the parts of the celery plant. Then identify the structures of the stem.**



**Flowers**: The reproductive part of the plant. Celery flowers appear late in the growing cycle, after the stalks would normally be harvested.

**Stem**: In celery, the stem is the small white part at the base of the plant. The stem protects the **vascular** system of the plant from environmental damage, and supplies the buds from which the stalks grow.

**Roots**: Absorb moisture and nutrients from the ground, sucking them into the plant to help it grow.

**Leaves**: Capture sunlight to help make food, a process known as **photosynthesis.**

**Vascular bundle**: Part of the plant's transport system, includes **xylem** and **phloem**.

# Luscious Leaves

## Purpose

The purpose of this lesson is to review the functions of plant leaves and to develop an understanding of leaves as edible parts of some plants. Many edible leaves are part of a healthy diet and are a good source of vitamin A.

## Time

*Teacher preparation:*
30 minutes

*Student activities:*
60-70 minutes

## Materials

*For the class:*

- Area for students to wash hands
- Butcher paper or area to write on board

*For each group:*

- Five edible leaf samples: lettuce, kale, spinach, parsley, Swiss chard

*For each student:*

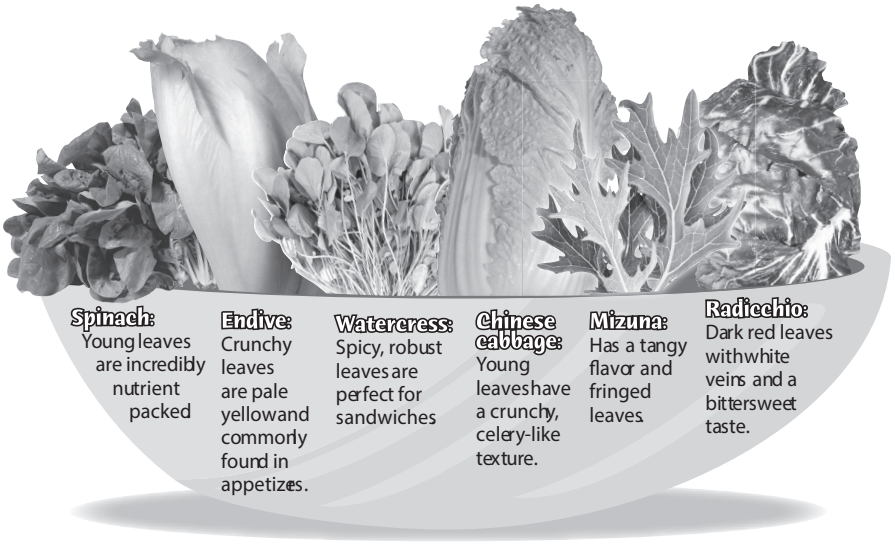
- Student handout with leaf investigation chart and vitamin A chart

## Background Information

The main function of a plant's leaves is to gather energy from the sun to carry out photosynthesis and make food for the plant. During photosynthesis, leaves use light energy to convert carbon dioxide and water into sugar.

Many leaves of plants are edible and are grown for food. Edible leaves include cabbage, lettuce, grape leaves, parsley, spinach, mustard greens, and Swiss chard. We are fortunate to have many different varieties of edible leaves grown by farmers in California. As a result, we have many healthy options when shopping for produce in our supermarkets or farmers markets.

Make sure students understand that not all leaves are edible and that they should never eat anything they are unsure of unless it is approved by a responsible adult.



# Luscious Leaves

## Content Standards

### Grade 2

**Science** 3e, 4b, 4c, 4e, 4g

**Next Generation Science**
2-LS4-1

**Mathematics**
- Measurement & Design 1, 4

**Health** 1.1N, 1.2N

**English Language Arts**
- Writing 8
- Reading 7
- Speaking and Listening 1a, 1b, 1c

### Grade 3

**Science** 3a, 5c

**Next Generation Science**
3-LS3-1

**Mathematics**
- Measurement & Design 4

**English Language Arts**
- Writing 8
- Reading 7
- Speaking and Listening 1a, 1b, 1c

## Procedure

### Part 1

1. Discuss the functions of plant leaves with your class. Possible topics include making food for the plant, decomposing and adding nutrients to the soil, and providing habitats for animals. After you talk about the functions of leaves, ask your students if they can think of any edible leaves that people like to eat. Make a list on the board. Explain that leafy greens are part of a healthy diet. Students ages 4-8 need 1 ½ cups of vegetables per day and students ages 9-13 need 2 to 2 ½ cups of vegetables per day. Two cups of raw leafy greens is considered one cup from the vegetable group.
2. Tell your students that today they are going to investigate five different types of edible leaves, by tasting, smelling, measuring, and observing. They will also compare their nutritional value by looking at their levels of vitamin A per serving.
3. Tell students that vitamin A is important for maintaining good vision, fighting infection, supporting cell growth, and keeping skin healthy. Research has shown that consuming foods rich in vitamin A may even prevent some kinds of cancer.
4. Organize students into groups of three or four and have them wash their hands before sitting in their seats. Distribute worksheets to each student and tell them that they will be using the *Leaf Tasting Investigation* chart for the next part of the lesson.
5. Show your class one edible leaf and show them where it is listed on the chart. Demonstrate how you would like each group to record the color, texture, smell, taste, and length of each leaf in the chart. Use a ruler to measure the length of each leaf. Examples of texture could include smooth, fuzzy, bumpy, sandpapery, slippery, etc. Be sure to discuss possible vocabulary with your students before they begin describing leaf texture, smell, and taste. Distribute a washed sample of the leaf to each group and guide them through the data collection. When students have recorded data in their charts, instruct them to tear off a small piece of the leaf to taste.
6. Repeat this procedure with the remaining four leaves and have students fill out the questions on the chart.

# Luscious Leaves

## Part 2

1. Have students fill in their chart to compare the vitamin A levels of the five leaves they tasted in part one. Students should use the chart template on the back page of their tasting chart.
2. Write these vitamin A % values on the board for all students to see.

| % Daily Value of Vitamin A for One Serving<br>*(One serving of raw leafy greens = 2 cups)* | | | | |
|---|---|---|---|---|
| Lettuce<br>= 53% | Kale<br>= 267% | Spinach<br>= 112% | Parsley<br>= 202% | Swiss Chard<br>= 88% |

3. Go through one example with the class and then have them work in their groups to fill in the bar graphs for the remaining leaves. Discuss which edible leaves are the best source of vitamin A and why this is an important nutrient.

## Conclusion

Farmers grow some plants for their edible leaves. Many edible leaves are a delicious source of vitamin A, and many other nutrients that are important in a healthy diet.

## Extensions

- Give each student a leaf and a crayon. Instruct students to remove the paper wrapping from the crayon. Have each student make a leaf rubbing by placing the leaf under a piece of paper and then rubbing the side of their crayon over the top of the paper. The image of the leaf will be visible. Mount the rubbings on colorful paper.
- Have students plant a lettuce or kale seed in a plastic cup. After the seedlings sprout, students can take them home to transplant and share healthy, leafy greens with their families.
- Bring in fresh and dried herbs. Discuss how they look and taste.

# Luscious Leaves

## Variations

- Make an edible leaf salad that the whole class can enjoy at the end of the lesson. For homework, have students track how many servings of leafy greens their family eats in a week.
- Discuss the following chart with the class and research why these nutrients are important in a healthy diet.

**There are many nutritional benefits of eating fresh, green, leafy produce!**

| | |
|---|---|
| **Folate** | Spinach, Chinese cabbage, leaf lettuce |
| **Potassium** | Beet greens, spinach, loose leaf lettuce, chard, parsley, endive |
| **Vitamin A** | Turnip greens, mustard greens, kale, collard greens, Chinese cabbage, leaf lettuce, romaine lettuce, spinach |
| **Vitamin C** | Kale, cabbage, collard greens, mustard greens, red cabbage, spinach |
| **Iron** | Spinach, chard, collard greens, parsley |
| **Fiber** | Spinach, collard greens, parsley |

## ELL Adaptations

- Model the *Think, Pair, Share* method: Have students turn to a partner and say, "What kind of leaves do we eat?" Explain that their partner should then respond, "We eat lettuce, spinach, and other examples."
- When introducing new vocabulary words, show students an example of the object.
- Make a "word wall" of new vocabulary and have students cut out pictures from magazines to match the vocabulary words.

# Leaf Tasting Investigation

Name: _____

| Leaf | Length (cm) | Color | Texture | Smell | Taste |
|---|---|---|---|---|---|
| Lettuce | | | | | |
| Kale | | | | | |
| Spinach | | | | | |
| Parsley | | | | | |
| Swiss Chard | | | | | |

Which leaf is the longest? _____ By how much? _____

My favorite leaf is _____, because _____

_____.

# Graphing

**% Daily Value of Vitamin A for One Serving**
*(One serving of raw leafy greens = 2 cups)*

Lettuce = 53%
Kale = 267%
Spinach = 112%
Parsley = 202%
Swiss Chard = 88%

| | 0 | 25 | 50 | 75 | 100 | 125 | 150 | 175 | 200 | 225 | 250 | 275 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Lettuce** | | | | | | | | | | | | |
| **Kale** | | | | | | | | | | | | |
| **Spinach** | | | | | | | | | | | | |
| **Parsley** | | | | | | | | | | | | |
| **Swiss Chard** | | | | | | | | | | | | |

Which type of leafy green has the most vitamin A? _____

How many cups is in one serving of spinach? _____

# Fabulous Flowers

## Purpose

The purpose of this lesson is to review the functions of flowers and to help students understand that some flowers are edible.

## Time

*Teacher preparation:*
30 minutes

*Student activities:*
40 minutes

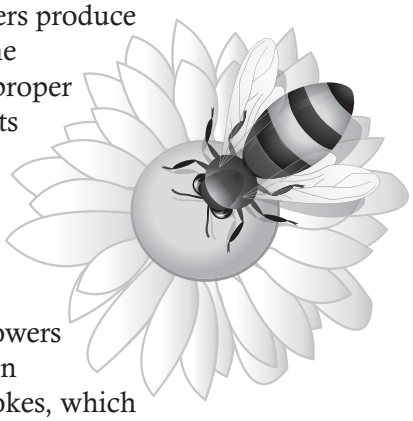
## Materials

*For the class:*

- Broccoli
- Cauliflower
- Vase
- Vegetable dip
- Cotton balls spray painted yellow *(pollen)*
- Straws *(bee proboscis)*
- Flowers

## Background Information

Flowers are the reproductive parts of plants. Some flowers have colorful petals and fragrances that attract pollinators such as bees, flies, butterflies, and moths. Most flowers produce seeds, which develop in the ovary of the fertilized flower. When planted in the proper environment seeds grow into new plants and the ripened ovary becomes the fruit.



Flowers of some plants are edible, including broccoli, cauliflower, and artichokes. Broccoli and cauliflower flowers are called "heads" and are usually eaten along with their stems, whereas artichokes, which are actually the buds of flowers, are eaten without the stems. Other flowers such as zucchini and orchid flowers, are considered a delicacy in some parts of the world.

Students should be warned that some flowers are poisonous and they should never eat anything they are unsure of, unless it is approved by a responsible adult.

## Procedure

1. Review and discuss the reproductive functions of flowers with the class. The flower attracts pollinators, such as insects and birds, and makes seeds that will grow into new plants. Ask your students to describe characteristics of flowers and make a list on the board.
2. Ask students if they know what a pollinator is. Explain that pollinators are animals that move pollen from the male part of flowers to the female part of flowers. Most plants require pollination to reproduce. Ask students if they can think of any examples of pollinators.
3. Play the *Bee Pollination Game* outside. Half the class will play the role of a bee and half will play the role of a flower. The "flowers" will each stand outside holding a flower (daisy, rose, or another flower that is available) and a yellow cotton ball for pollen. "Bees" will each have a half of a straw for their proboscis. Bees will also have a cotton ball, which represents pollen that stuck to them as they were visiting flowers. Explain that bees must fly around the

# Fabulous Flowers

## Content Standards

### Grade 2

**Science** 3e

**Next Generation Science**
2.LS2.2

**Health** 1.7N

**English Language Arts**
- Reading Informational Text 7

### Grade 3

**Science** 3a

**Next Generation Science**
3.LS1-1

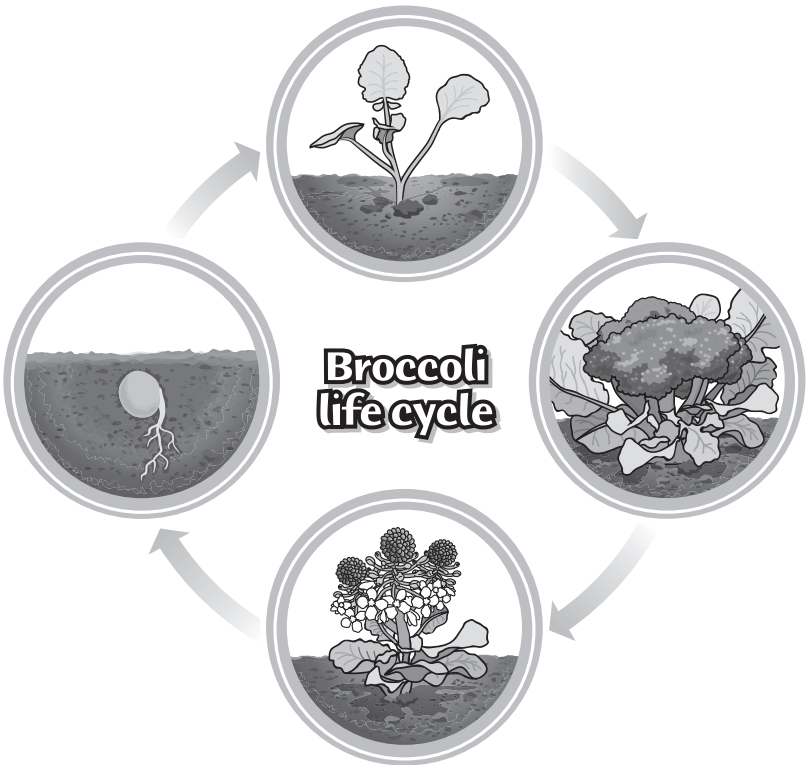
**English Language Arts**
- Reading Informational Text 7

garden looking for flowers so they can drink their nectar. Bees will go from flower to flower and pretend to drink nectar with their straw proboscis. At each flower "bees" and "flowers" are to trade "pollen" (cotton balls). Explain that as bees are busy gathering flower nectar for food, the pollen accidentally gets stuck on their legs or fuzzy body and this is how they end up carrying pollen from one flower to another, thus pollinating the flowers so they can develop fruit and seeds. At the end of one round, have students switch roles so everyone gets a chance to be the flower and the bee.

4. Arrange broccoli, artichokes, and cauliflower in a vase of water. Tell your students that you received a beautiful bouquet of flowers. Show them your bouquet. Discuss that broccoli, cauliflower, and artichokes are flowers that people eat.

5. Draw the life cycle of broccoli on the board. Begin with the seed, which grows into a plant with leaves, then show the buds on the head of a broccoli flower, then the flowering broccoli plant, and then back to the seed. Show students the stage at which we pick the broccoli to eat, just before it flowers.

6. Cut the broccoli and cauliflower into bite-sized pieces. Distribute them with vegetable dip and have the students taste the flowers.



# Fabulous Flowers

## Conclusion

Flowers are the reproductive parts of plants. Flowers attract pollinators and the flowers of certain plants are edible.

## Variation

- Have students draw the life cycle of broccoli with you as you draw it on the board. Ask students to draw a bee at the stage in broccoli development when pollination would occur.

## Extensions

- Have students make prints with an artichoke. Cut the artichoke in half lengthwise, dip the artichoke in paint, and then press it on construction paper.
- Invite a flower farmer into your classroom. Have the farmer discuss the flower operation and bring several examples of flowers for display. Contact your local county Farm Bureau for possible guest speakers.
- Place the stem of a whole head of broccoli in a vase of water to see if the flowers will bloom.
- Have students research pollinators and invite a beekeeper into your classroom. Contact your local county Farm Bureau for possible guest speakers.
- Go to your local supermarket or nursery and obtain flowers that are no longer sellable. Have the students dissect the flowers and identify the parts. Refer to Flower Hour lesson, in *What do Plants Need to Grow?* unit from CFAITC.
  *www.LearnAboutAg.org/lessonplans*

## ELL Adaptations

- Model the *Think, Pair, Share* method: Have students turn to a partner and say, "Why are bees important?" Their partner then responds, "Bees are important for pollinating many plants."
- This lesson involves kinesthetic activities to help all students understand the role of bees in pollination by acting out the process.

# Freshest Fruits

## Purpose

The purpose of this lesson is to learn about fruit and its nutritional value, including vitamin C.

### Time

*Teacher preparation:*
20 minutes

*Student activities:*
50 minutes

### Materials

*For the teacher:*

- Fruit knife

*For the class:*

- Paper towels
- One different type of fresh fruit for each group *(Example: apple, peach, kiwifruit, orange, avocado, strawberry, grapes)*
- Rulers

*For each student:*

- *As I See It* handout (page 34)

## Background Information

Crops that are usually listed as fruits are grown on trees, shrubs, or vines and produce fruit for a number of years. These include apples, apricots, avocados, cherries, dates, berries, figs, grapes, lemons, nectarines, olives, oranges, and pears. The fruit of a plant generally surrounds the seeds of a plant. The fruit protects the seeds and attracts animals and insects. When animals eat the fruit they usually also eat the seed, which will later be deposited with the animal's scat, or waste. The scat provides nutrients for the seed to grow into a plant. This process helps disperse seeds and plants to new areas. For example, birds might eat berries in one location, then fly to another location and deposit their scat with the berry seeds in the new location. A person might pick an apple from a tree, then carry it to a different place to eat, and drop the seeds in this new location.

Today, Californians are fortunate to have access to fresh fruit year round. This wasn't always the case. When the gold rush in California began in 1849, hundreds of thousands of people began to move west to California seeking their fortunes in the gold mines. These miners and their families lacked fresh foods, especially those rich in vitamin C. A lack of vitamin C causes a disease called scurvy. Symptoms of scurvy include general weakness, bleeding of gums, and rupture of capillaries under the skin. In the gold rush days, citrus juice was often prescribed as a medical cure for scurvy and was sold for $1 an ounce.

While many miners did not strike it rich in gold, some discovered that the fertile soil in many parts of California was ideal for farming. Many crops were planted, including fruit orchards in order to meet the demand for fresh fruit from miners and settlers. Modern refrigeration was not yet available to keep fruit fresh after it was picked. Canning was the method used to preserve fruit after harvest so it could be eaten throughout the year and shipped to consumers in other parts of the state. Today, shipping of produce has become much faster and efficient than in the 1800s, and both fresh and canned fruit are readily available in our grocery stores all year long. California is the leading agricultural state in the nation, growing over 400 crops.

Fruits are an excellent source of vitamin C in our diets. Vitamin C helps the body heal wounds and lowers the risk of infection. It also helps keep the body from bruising and builds the tissue that holds muscles and bones together. Known as ascorbic acid, Vitamin C also helps the body absorb the iron found in foods and strengthens the immune system.

# Freshest Fruits

### Content Standards

### Grade 2

**Science** 2a, 2f, 4b, 4e, 4g

**Next Generation Science**
2-LS2.A

**English Language Arts**
- Writing 8
- Speaking and Listening 1a, 1b, 1c

**Health** 1.7N, 1.4.N

**History-Social Science**
2.4.1, 2.4.2

### Grade 3

**Science** 3a

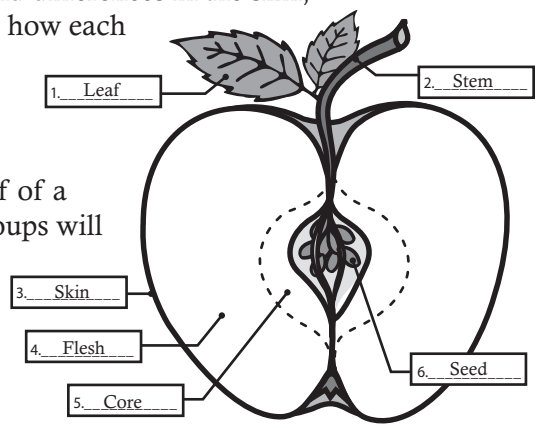
**Next Generation Science**
3-LS1.B

**English Language Arts**
- Writing 8
- Speaking and Listening 1 a, 1b, 1c

**History-Social Science**
3.1.2, 3.3.2, 3.5.1

## Procedure

1. Prior to class, cut each of your fresh fruits in half.
2. Before group work begins, display the entire selection of fruits for the students to observe. Hold each fruit up in front of the class and discuss the similarities and differences in the skin, seeds, and flesh. Explain how each fruit is grown.
3. Organize students into groups of two or three. Give each group one half of a piece of fruit. Not all groups will have the same type of fruit. Instruct students to examine the inside of the fruits and complete the *As I See It* handout.




4. After students complete the handout, discuss the answers as a class. Have students hold up their fruit for all of the class to see and point out the seed, flesh, and skin. Discuss the purpose of these different parts.
5. Have students find the listed percentage of vitamin C for their fruit. Students ages 4-8 need 1 to 1 ½ cups of fruit per day. Students ages 9-13 need 1 ½ cups of fruit per day.
6. These are listed on the *As I See It* handout. Call on each group and ask them for the % vitamin C in their fruit. Write the numbers on the board and make a bar graph for students to see.
7. Ask students to look at the bar graph and determine which two fruits are the best sources of vitamin C. Discuss how vitamin C plays an important role in our diets.
8. As a concluding discussion, review with the class:
   a. California grows an abundance of fruit crops.
   b. Fruit is a nutritious snack and provides important dietary requirements like vitamin C.
   c. The flesh of the fruit attracts animals who eat the fruit. When fruit seeds are planted or deposited in animal scat, they grow into new seedlings and the life cycle of the fruit plant continues.

# Freshest Fruits

## Extensions

- Visit a fruit packing plant or farm. Learn how fruit is grown, graded, and packed.
- Have students research a particular fruit and make a poster that illustrates how it is grown and how it gets from the farm to our homes.
- Make a collage using the seeds from the different types of fruit.

## Variations

- Prior to the lesson, ask students to brainstorm ideas for what they should do with the fruit that is used in this activity. Display some recipes for healthy fruit snacks.
- If fruit is not available, examine pictures of fruit from cooking magazines and identify the parts.

## ELL Adaptations

- Demonstrate activity procedures before allowing students to begin. ELL students will benefit from observing the procedures before they get started.
- This lesson incorporates hands-on activities. Kinesthetic learning events provide an excellent learning environment for the English learner.

# As I See It

Name: _____

1. In the box provided, draw what you see after your fruit is cut in half. Label the skin, flesh, and seed or seeds.

   How many seeds does your fruit have? _____

   Measure the length of your seed. _____

   Measure the width of your seed. _____

2. Describe the texture of the fruit skin. _____

   _____

3. Why do plants have fruit? _____

   _____

4. Why do plants have seeds? _____

   _____

5. Which of the fruits that were examined by your class have the highest content of vitamin C? _____

   _____

6. Why is vitamin C important? _____

   _____

7. How did the Gold Rush play a part in California's agricultural history? _____

   _____

   _____

   _____

| % Daily Value of Vitamin C Per One Cup Serving of Fruit | | | |
|---|---|---|---|
| Apple = 8% | Grape = 8% | Peach = 18% | Strawberry = 142% |
| Avocado = 24% | Grapefruit = 120% | Pear = 10% | Mandarin = 86% |
| Banana = 22% | Kiwifruit = 278% | Pineapple = 130% | Watermelon = 20% |
| Cantaloupe = 98% | Orange = 160% | Raspberry = 50% | |
| Cherry = 14% | Plum = 26% | Blackberry = 50% | |

Source: *www.nal.usda.gov/fnic/foodcomp/search*

# Supreme Seeds

## Purpose

The purpose of this lesson is to review the functions of seeds and to learn about plants that are grown for their edible seeds.

## Time

*Teacher preparation:*
15 minutes

*Student activities:*
40 minutes

## Materials

*For each student:*

- Poster board or cardboard

*For each group of four students:*

- A wide variety of dried seeds such as beans, sunflower seeds, peas, rice, caraway, or millet. You can buy birdseed mix or bags of beans in the soup section of your grocery store.
- Felt pens
- Glue
- Egg carton

## Background

Plants produce seeds so their species will continue to exist in nature. Each seed contains a tiny plant embryo with one or two cotyledons or "seed leafs," which supply the seed with energy and materials for growth until the young plant grows its first true leaves and makes food for itself through photosynthesis.

Seeds provide nourishment to people all over the world. Corn, oats, rice, and wheat seeds are known as cereal grains and are part of the grains food group. Whole grains are an important source of dietary fiber, which is important for proper bowel function and may lower the risk for heart disease and obesity. Grains are also a source of B vitamins, which help the body release energy from the food that we eat.

Edible seeds, known as legumes, include peanuts, peas, and beans. Other edible seeds include nuts, such as walnuts, almonds, pistachios, and pecans. These nuts have protein and are part of the protein food group. Proteins are an important part of our diet because they serve as building blocks for muscle, cartilage, bones, blood, and skin.

## Procedure

1. Place a wide variety of seeds in to the compartments of the egg cartons. Distribute one filled egg carton to each group of four students.
2. Provide time for the students to examine the seeds. As a class discuss the similarities and differences between the seeds. Sort them into piles. Which seeds do people eat? Which seeds do birds or other animals eat?
3. Discuss the function of seeds.
4. Read selected stories about different seeds such as *Which Seed is This?* by Lisa Amstutz, *Seeds* by Vijaya Bodach, *Spot the Difference: Seeds* by Charlotte Guillain, and *A Packet of Seeds* by Deborah Hopkinson. See page 66 for related literature.
5. Have each student make a seed mosaic as follows:
    a. Have each student sketch a simple picture or design on posterboard or cardboard. Ideas include basic outlines of fish, tractors, cars, birds, pears, trees, and more.

# Supreme Seeds

## Content Standards

### Grade 2

**Science** 2f, 4c

**Next Generation Science**
2-PS1-1, 2-PS1-3

**Visual Arts** 1.1, 2.1, 2.2, 5.1

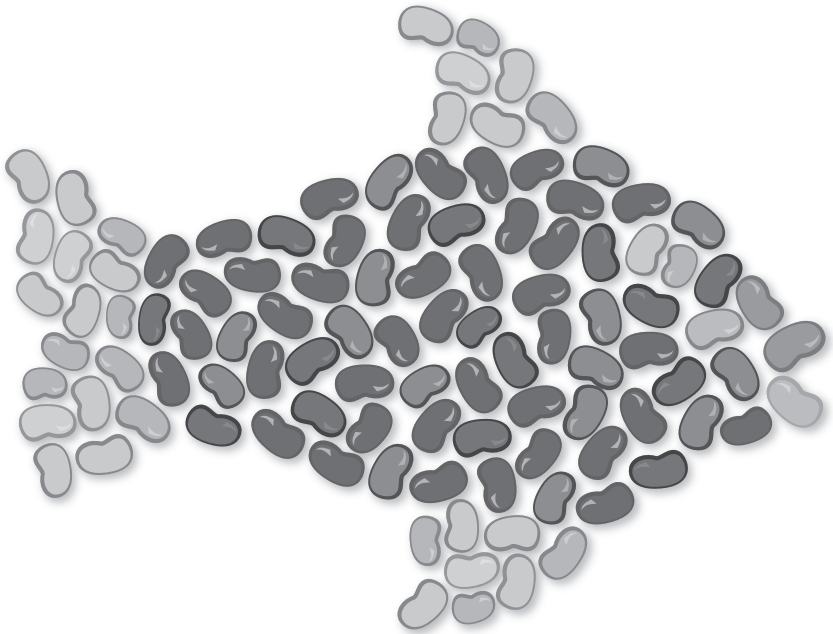
**Health** 1.1N

**English Language Arts**
- Reading Informational Text 10

### Grade 3

**Visual Arts** 1.1, 1.5

b. After giving students a demonstration of how they can glue seeds on their poster board to create different designs, have students create their own colorful display.



c. Display the mosaics in the classroom, school hallways, and offices.

## Conclusion

Seeds come in various shapes and sizes. Seeds have many functions, including plant reproduction, and are also a common food source around the world.

## Extensions

- Have the students examine a mature sunflower. Instruct the students to estimate the number of seeds in the sunflower, then count the seeds as they remove them. Roast the seeds and enjoy eating them.

- Have students save seeds from fruits and vegetables they eat. Have students draw a picture of the fruit or vegetable and then glue the seeds onto the paper to form an outline of the drawing. Bind the samples together to make a class seed book.

# Supreme Seeds

- Organize a "Seeds for Lunch" day. Each dish must contain edible seeds. Examples include corn bread, peanut butter and jam sandwiches, rice pudding, granola, burritos, popcorn balls, banana-nut bread, chocolate covered raisins, and corn on the cob.

- Have the students examine various ways seeds promote their own dispersal. For example, some seeds get caught in animal fur while others are carried by the wind. Seeds, such as coconuts and cranberries, float, some get dispersed in animal scat, and others spread by exploding.

## Variation

- Use birdseed or feed grains in a classification activity and discuss the different seeds that are fed to livestock.

## ELL Adaptations

- Model the *Think, Pair, Share* method: Tell students to ask a partner, "Name a type of seed that people eat." Their partner should then respond, "People eat sunflower seeds."

- Provide a variety of seeds and their name labels for display.

# Edible Plant Game

## Purpose

The purpose of this activity is to reinforce the concept that plants consist of six basic parts: roots, stems, leaves, flowers, fruits, and seeds. Students will recognize these different edible plant parts and the important role they play in our diets.

## Time

*Teacher preparation:*
20 minutes

*Student activities:*
Two, 50-minute sessions

## Materials

*For the class:*

- Edible Plant Part Cards (pages 41-54), 28 cards printed on cardstock.
- Colored pencils
- PowerPoint presentation showing color photos of fruits and vegetables. Download from *www.LearnAboutAg.org/edibleplantparts* to see the following: almonds, artichoke, avocado, brussels sprouts, carrot, cauliflower, celery, cotton, grapes, iceberg lettuce, kiwifruit, lemon, olive, onion, peach, parsnip, pear, potato, pumpkin, rice, silage, spinach, strawberry, herbs, tomato, wheat, and more.

## Background Information

This activity will be most beneficial if it is performed by the students after they have done the lessons on individual plant parts. It incorporates the knowledge students have gained about plant parts with the fact that plants provide people with the nutrients and energy needed for a healthy lifestyle.

## Procedure

1. Show the *Edible Plant Game* PowerPoint slide show to the class. Discuss the description of each fruit or vegetable as you show each picture. Talk about how the fruit or vegetable is grown, what part of the plant is consumed, and what nutrients it provides. Explain to students that they will be playing a game based on the information from the presentation.
2. Reproduce the edible plant cards on cardstock. Give one to each student and instruct them to color their plant card with colored pencils.
3. You will need 28 participants for this activity. If you have fewer students, assign more than one card to several students. If you have more students, make extra copies of some of the cards.
4. After students have colored the cards, collect them and shuffle them. Pass a card out to each student. Instruct students to form a large circle and hold their edible plant card in front of them.
5. Begin the game by having one student read his or her question from the card aloud. The student who has the correct answer will hold his or her card up for the class to see and say, *I am a* _____. Then that student will read the question from their card aloud to the class. Continue the game until all 28 cards have been shared.
6. After the class has done the activity once, redistribute the cards so everyone has a new food. Do the activity again, this time a little faster!
7. Optional: Download the "Harvest of the Month Survey" from the Assessment section of the Educator's Corner page of the Harvest of the Month website: *www.harvestofthemonth.cdph.ca.gov/EdCorner* Instruct students to fill out the survey and discuss answers as a class.

# Edible Plant Game

## Content Standards

**Grade 2**

**Science** 4c, 4g

**Next Generation Science**
2-LS2.A

**Health** 1.2N, 1.7N

**English Language Arts**
- Reading Text 1, 10

**Grade 3**

**Science** 3a, 5c, 5e

**English Language Arts**
- Reading Text 1, 10

## Extensions

- Take a trip to the produce section of a grocery store. Identify the produce as roots, stems, leaves, flowers, fruit, and seeds.
- Have the students keep a food journal for a week, recording the leaves, stems, seeds, flowers, roots, and fruit that they eat.
- Make a KWL chart on the board and have the class brainstorm to fill in the things students *Know*, what they *Want* to know, and what they have *Learned* from the lesson.

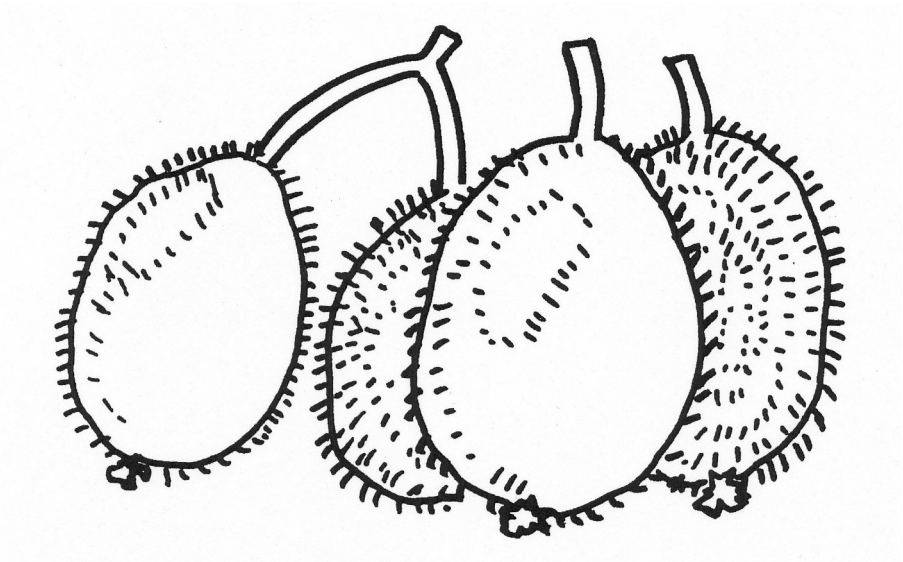
## Variation

- Make a set of 28 edible plant cards for each group of four students. Have students play the game in small groups rather than as a whole class.

## ELL Adaptations

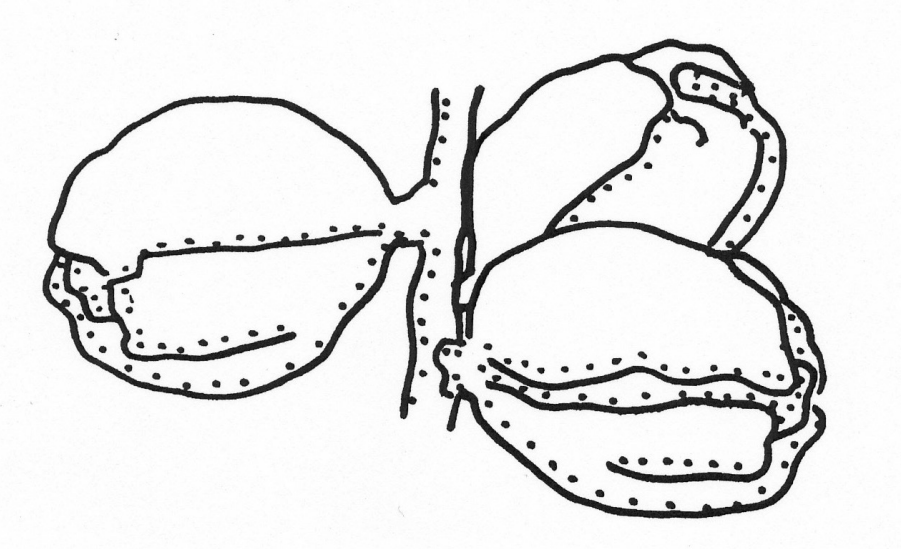
- Have the class cut out pictures of fruits and vegetables from magazines and grocery store ads and place them on a bulletin board next to the appropriate name label.
- Model a couple examples of the game question and answers before beginning the activity.

## I AM A KIWIFRUIT



Who looks like a baby cabbage and is a good source of Vitamin C?

## I AM A BRUSSELS SPROUT

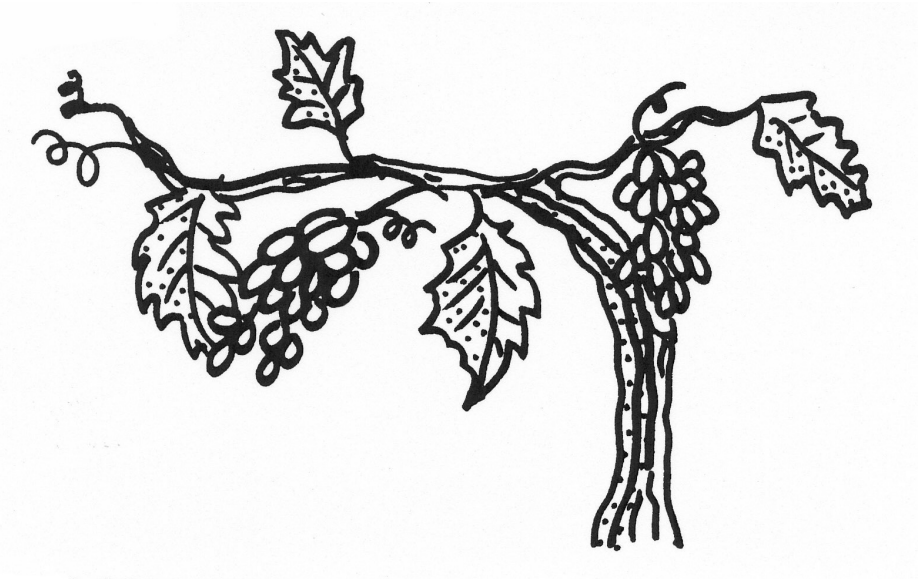


Who is the top producing agricultural state in the U.S.?

## I AM CALIFORNIA

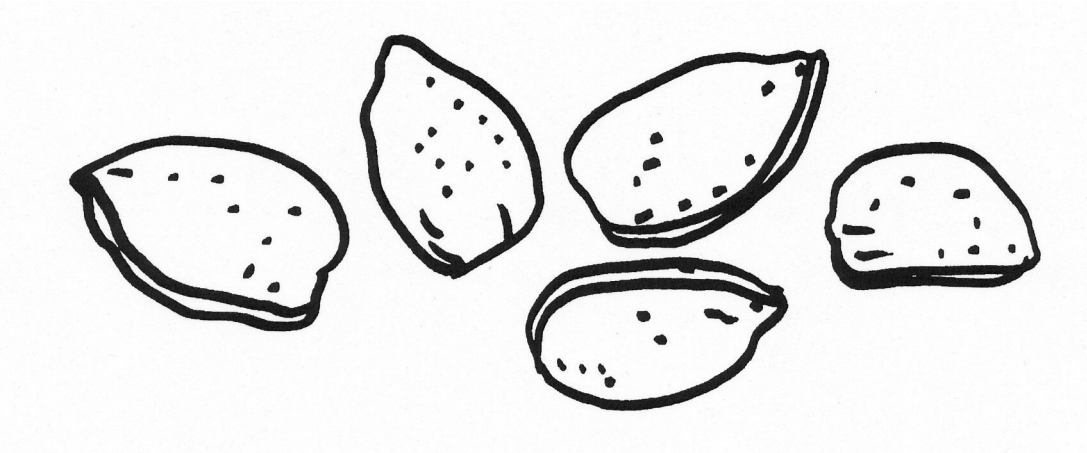
Who is the fruit that can be dried to make raisins?

## I AM GRAPES



Who is the nut that may be eaten roasted or raw?
California is the world's top producer of these nuts.

## I AM AN ALMOND

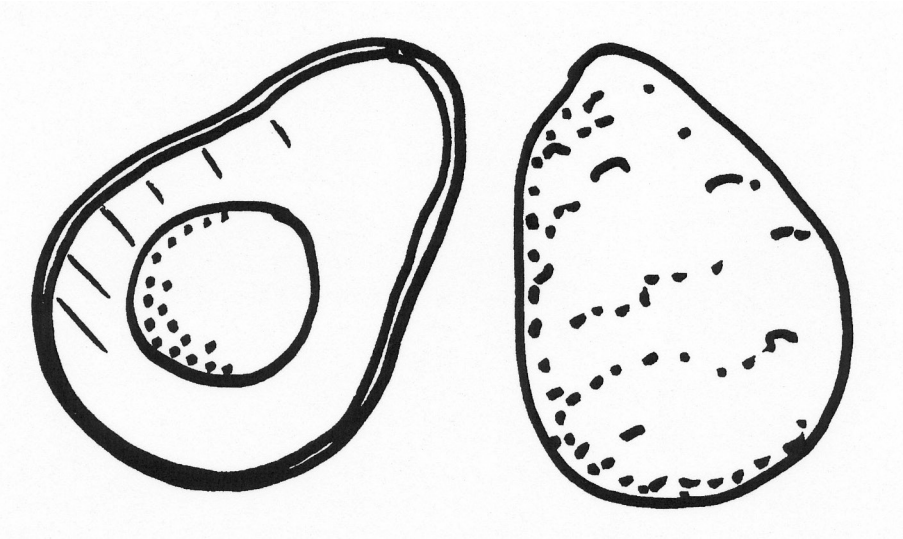


You should fill half of your plate with fruits and _____?

## I AM VEGETABLES

Who is a green fruit that when mashed up makes a tasty dip for chips and topping for tacos?

## I AM AN AVOCADO

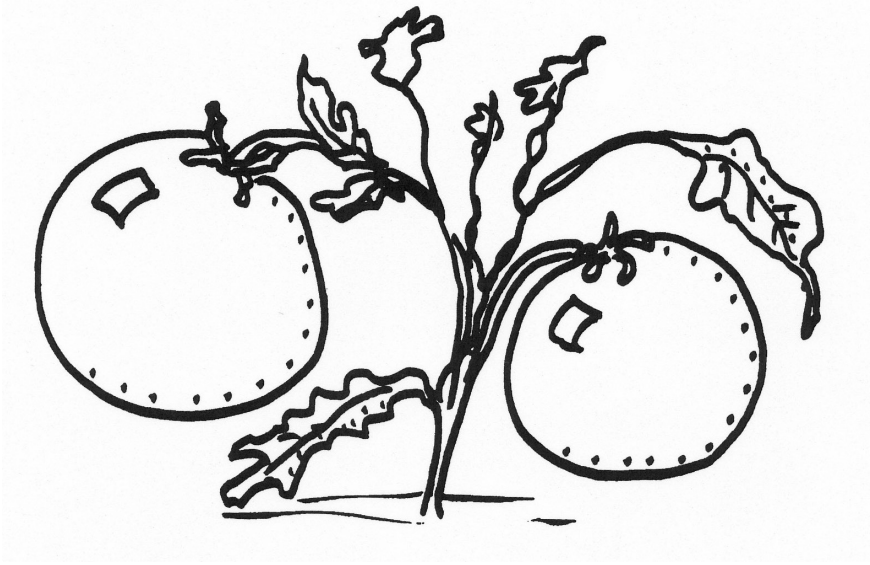


Who is a type of squash grown for Jack O' Lanterns
at Halloween and pies at Thanksgiving?

## I AM A PUMPKIN

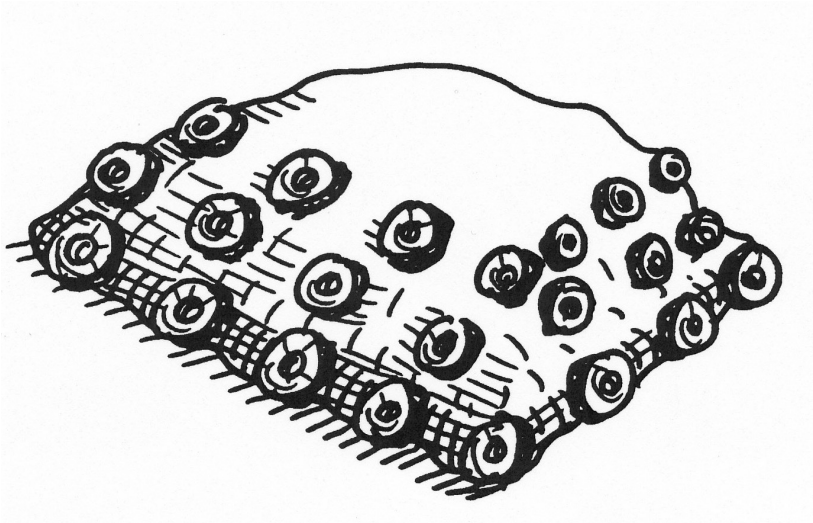
Who is a red fruit that is used in pizza and spaghetti sauces
and is a good source of Vitamin C?

**I AM A TOMATO**



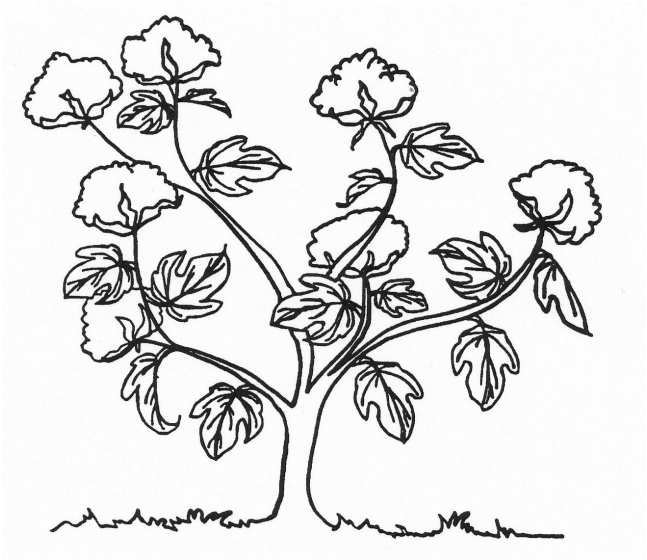
Who is a livestock feed made of fermented grass crops like clover, alfalfa, and corn ?

**I AM SILAGE**



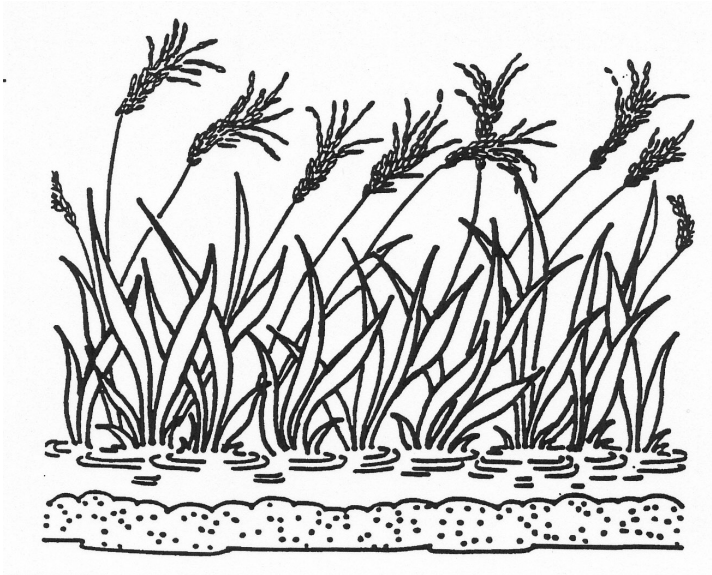
Who is a plant that makes fabric for clothes?

## I AM COTTON



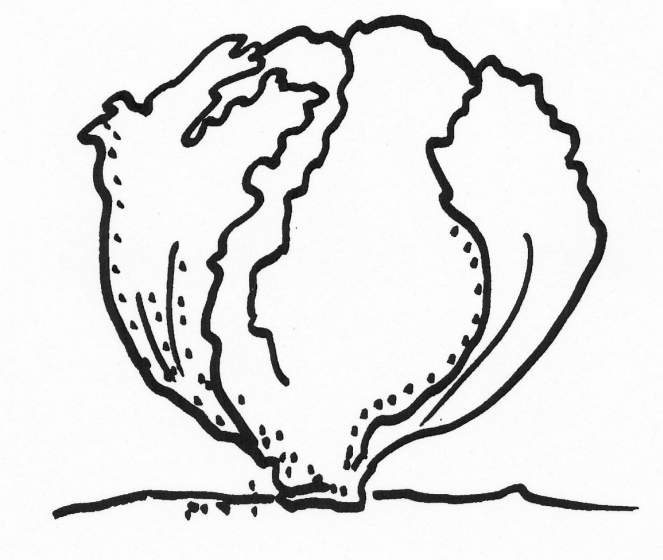
Who is a grain that is planted by dropping seeds from airplanes that fly over flooded fields?

## I AM RICE



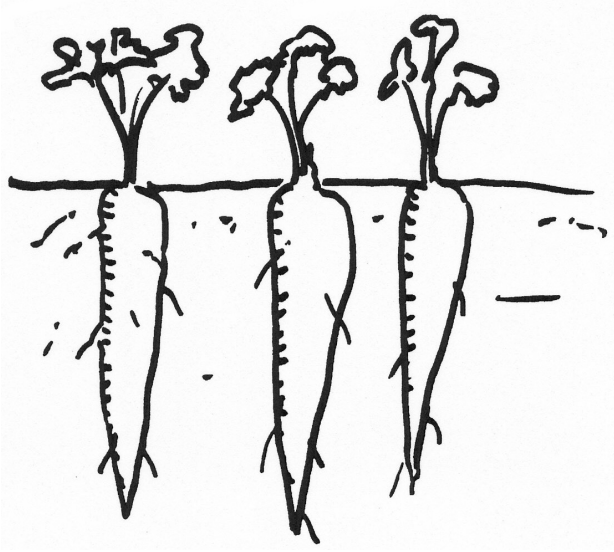
Who is the type of salad green that has a very cold name?

**I AM ICEBERG LETTUCE**



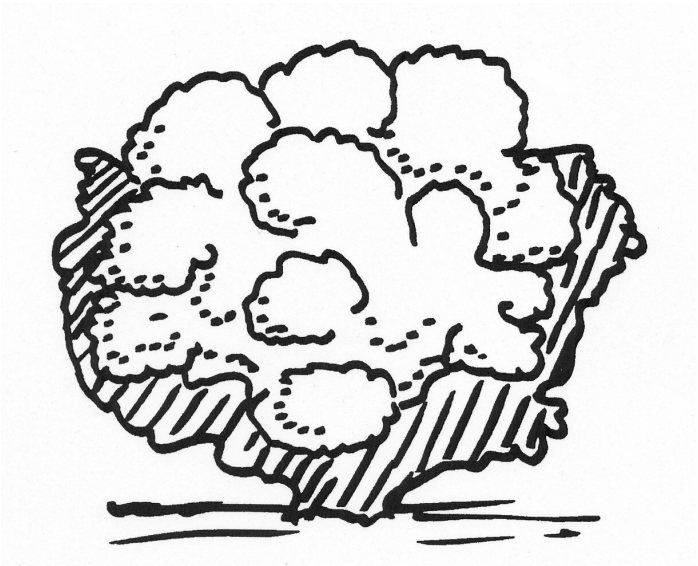
Who is an orange root that is full of Vitamin A?

**I AM A CARROT**



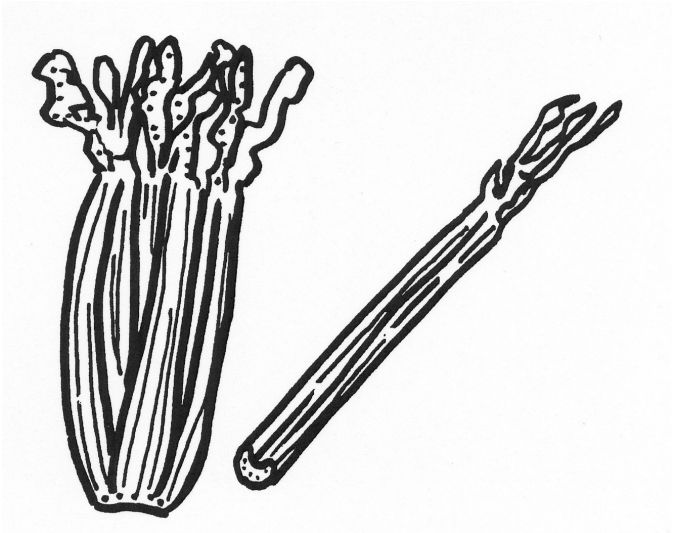
Who is a white flower that people eat?

## I AM CAULIFLOWER



Who is a green stem that is sometimes eaten
with peanut butter or cream cheese?

## I AM CELERY

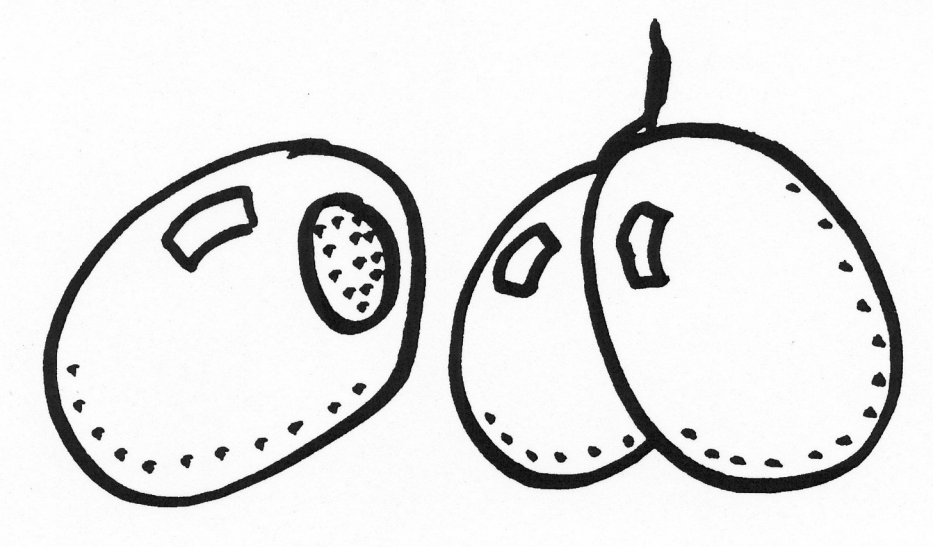


Who is a red fruit that is a good source of Vitamin C
with lots of tiny seeds on its outside?

## I AM A STRAWBERRY

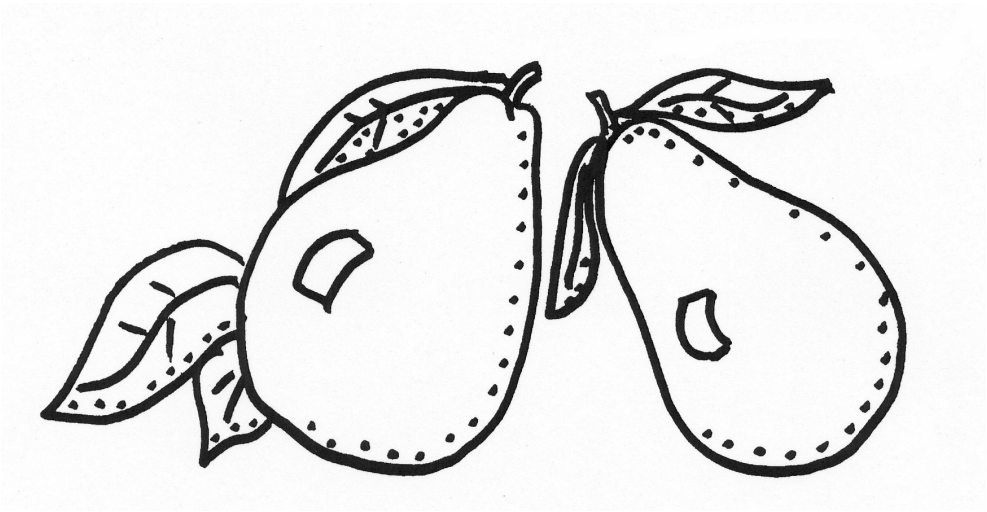
Who is a black or green fruit that is sometimes put on pizzas and is used to make cooking oil?

## I AM AN OLIVE



Who is a yellow, green, or brown tree fruit that is high in fiber and has a slightly gritty texture?

## I AM A PEAR



Who is a bulb that grows underground and makes
your eyes water when you cut it?

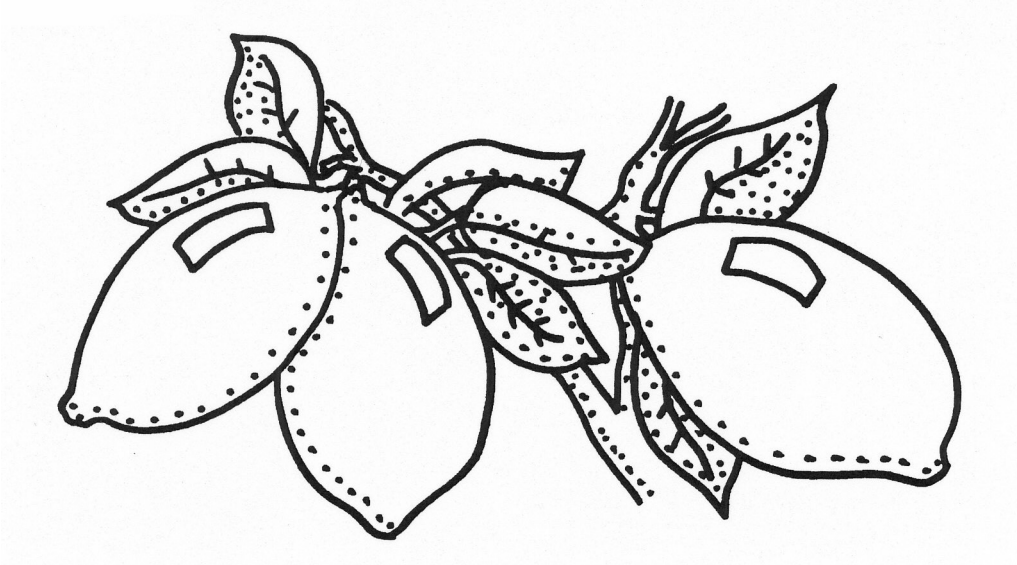
## I AM AN ONION

Who is a green, edible flower with spiky ends?
California is a leading producer of these vegetables.

**I AM AN ARTICHOKE**

Who is a sour yellow citrus fruit?

**I AM A LEMON**



Who is a grain used to make most breads in the United States?

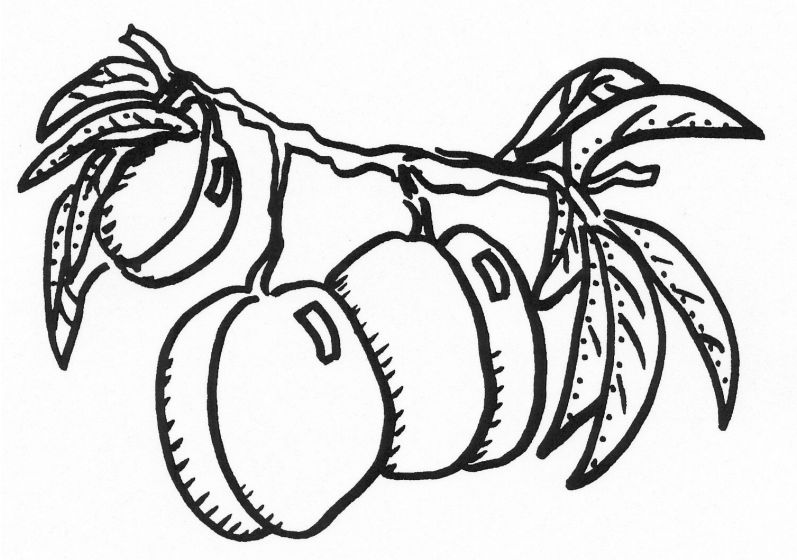
## I AM WHEAT

Who is a leaf that is often added to salads for a source of Vitamin A?

## I AM SPINACH

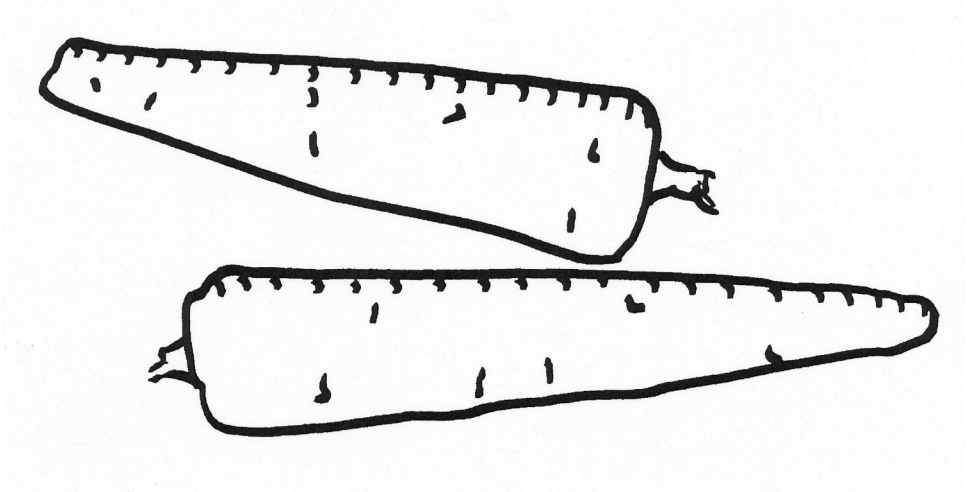
Who is a fuzzy fruit with yellow to pink skin that can be eaten fresh or canned?

## I AM A PEACH



Who is a white root vegetable that looks something like a carrot?

## I AM A PARSNIP

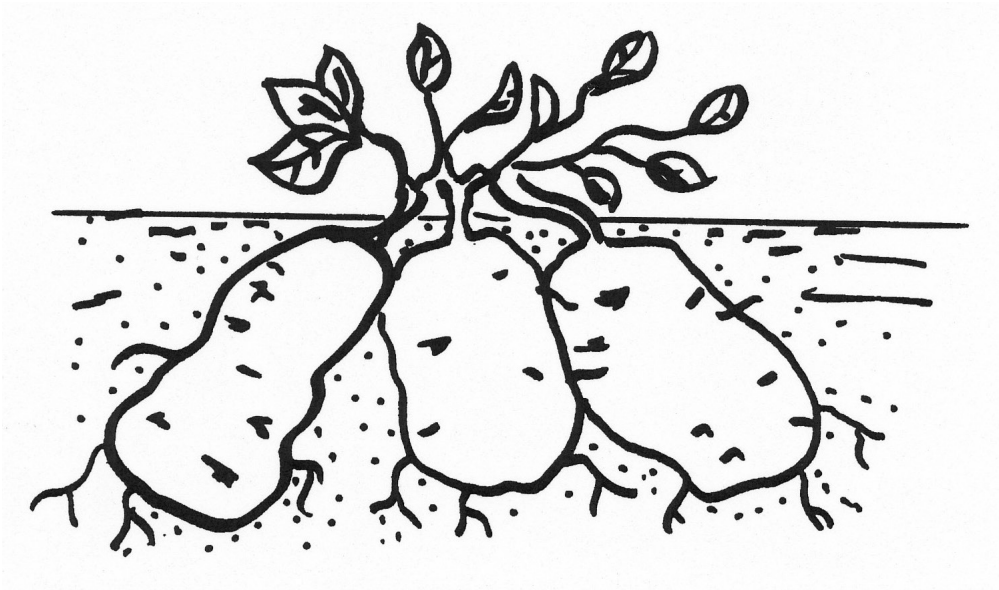


Who is a pink to red melon with black seeds?
Sometimes these melons can be seedless.

## I AM A WATERMELON

Who is an underground stem called a tuber that comes in many varieties, including russet, red, and Yukon Gold?

## I AM A POTATO



Who is a brown, furry skinned fruit with green flesh and black seeds?

# Eat 'Em Up

## Purpose

The purpose of this lesson is for students to review the plant parts that they eat, and choose a favorite fruit or vegetable to feature in a healthy recipe that they will share with their families. Students will work with an adult family member to prepare the recipe, and share its nutrition information as part of a home-cooked meal.

## Time

*Teacher preparation:*
15 minutes

*Student activities:*
50 minutes
Homework: 1½ hours

## Materials

*For the class:*

- Internet access

*For each student:*

- *Edible Plant Parts* Parent Letter (page 58)

## Background Information

California farmers produce an abundance of fresh produce that provides Californians with many options for healthy meals. Fruits and vegetables are an excellent source of the nutrients students need for healthy growth and development. In order to get the recommended daily value of fruits and vegetables, the USDA recommends that children between the ages of 4 and 8 consume approximately 1 to 1½ cups of fruit and 1½ cups of vegetables per day. For children between the ages of 9 and 13, the USDA recommends 1½ cups of fruit and 2 to 2½ cups of vegetables per day. A visit to the supermarket or farmers market will showcase the variety of produce that is available and the different plant parts that are harvested for consumption.

The following list provides some examples of edible plant parts *(some foods fit into more than one category)*:

| Roots | Stems | Flowers | Leaves | Fruits | Seeds |
|---|---|---|---|---|---|
| Beet | Asparagus | Broccoli | Cabbage | Tomato | Corn |
| Carrot | Bok Choy | Cauliflower | Basil | Apple | Rice |
| Ginger | Broccoli | Artichoke | Bok Choy | Banana | Beans |
| Onion | Potato/ Sweet Potato | Zucchini | Lettuce | Strawberry | Coconut |
| Radish | Celery | Sunflower | Mint | Grape | Pumpkin |
| Potato/ Sweet Potato | Rhubarb | | Spinach | Pumpkin | Sunflower |
| Turnip | | | Parsley | Zucchini | |

# Eat 'Em Up

## Content Standards

### Grade 2

**Health** 1.2N, 1.4N, 1.6N, 1.7N, 3.1N, 6.1.N, 8.1N

**English Language Arts**
- Reading Informational Text 1, 10

### 3rd Grade

**Health** 2.1G, 7.1.G, 6.1M, 6.1P, 8.1P

**English Language Arts**
- Reading Informational Text 1, 10

## Procedure

1. Visit your local produce department and ask if there are any items that could be donated or purchased at a discount for display in your classroom. Gather a variety of vegetables that fit into the root, stem, flower, leaf, fruit, and seed categories. Spread these fruits and vegetables out on a table in your classroom. Invite students to inspect the samples. As a class, organize the produce into categories based on what part of the plant we eat. Remember that some fruits and vegetables will fit into more than one category. Discuss USDA nutrition recommendations with your students. A healthy diet for children between the ages of 4 and 8 includes approximately 1 to 1½ cups of fruit and 1½ cups of vegetables per day. For children between the ages of 9 and 13, the USDA recommends 1½ cups of fruit and 2 to 2½ cups of vegetables per day. Emphasize to your students that they have many choices to help them meet the recommended daily intake of fruits and vegetables, and that healthy eating makes us feel good and gives us energy to grow, learn, and play.
2. Send home the parent letter for the *Edible Plant Parts* unit, page 58.
3. Explain that the class will be going to the computer lab so each student can look up a recipe featuring a favorite fruit or vegetable. Once they have found their recipe, students will go home and prepare the recipe with an adult family member and share it with their family during a meal.
4. In the computer lab, give students the following step-by-step instructions once they have logged on to *www.harvestofthemonth.com*
    a. Click on the large purple icon called "Download Monthly Elements" in the upper-right corner.
    b. Choose a favorite fruit or vegetable from the fall, winter, spring, or summer column and click on it.
    c. Click on the PDF for "Family Newsletter" *(Choose English or Spanish).*
    d. Find the recipe on the Family Newsletter.
    e. Print or write down the recipe to prepare at home.
5. Provide students with the parent letter/instruction sheet for preparing their recipe at home. The instruction sheet will need to be signed by an adult family member to show that the recipe was prepared and served to the family.

# Eat 'Em Up

## Extension

- In the computer lab, allow your students to explore the "Kids' Place" section of MyPlate. There are a number of fun and educational games and activities that teach students about the benefits of healthy eating and exercise habits.
  *www.choosemyplate.gov /kids*

## Variation

- Instead of buying fruits and vegetables for display, draw columns on the board for roots, stems, flowers, leaves, fruits, and seeds and ask students to help you fill in examples of each.

# Edible Plant Parts Unit

Dear Parents,

Our class is studying a unit on *Edible Plant Parts*. This unit teaches students about plant anatomy, agriculture, and healthy eating habits. As a culmination to this activity, your student chose a healthy recipe featuring their favorite fruit or vegetable. We ask that you help your student prepare the recipe and serve it as part of a meal at home. We selected recipes in the computer lab at school using the Harvest of the Month website from the Network for a Healthy California. Directions for the project are listed below. Please sign and have your students return this paper to class once you have completed the project. Thank you for your participation.

**Procedure for Parents and Students**

1. Purchase ingredients for the recipe chosen by your student. If you have a computer, you may view other recipes by clicking on the "Monthly Elements" tab at *www.harvestofthemonth.com*
2. In the Family Newsletter you can find recipes, daily serving size, nutrition facts, and other information about your selected fruit or vegetable.
3. Answer the following questions using the information on the family newsletter where your recipe is listed.
   a. What fruit or vegetable are you featuring in your recipe?_____
   b. What is the name of the recipe that you will be preparing?_____
   c. What is one serving size for the recipe you will be preparing?_____
   d. How many people will the recipe serve?_____
   e. What are some key nutrition benefits of your chosen fruit or vegetable?_____
      _____
      _____
4. Prior to cooking, wash cookware, cooking surfaces, produce, and your hands.
5. Prepare your recipe as outlined in the directions.
6. Serve the recipe to your family during a meal. Explain the nutrition benefits of your chosen fruit or vegetable to your family.

This project has been completed: _____ Date:_____

*Parent Signature*

# Agricultural Organizations

## General

**California Farm Bureau Federation**
2300 River Plaza Drive
Sacramento, CA 95833
Phone: (916) 561-5500
Email: *cfbf@cfbf.com*
Website: *www.cfbf.com*

**California Federation of Certified Farmers' Markets**
Post Office Box 1813
Davis, CA 95617
Phone: (530) 753-9999
Email: *CFCFM@comcast.net*
Website: *www.cafarmersmarkets.com*

**California Foundation for Agriculture in the Classroom**
2300 River Plaza Drive
Sacramento, CA 95833
Toll free: (800) 700-2482
Fax: (916) 561-5697
Email: *info@LearnAboutAg.org*
Website: *www.LearnAboutAg.org*

**California Rare Fruit Growers**
The Fullerton Arboretum - CSUF
Post Office Box 6850
Fullerton, CA 92834-6850
Website: *www.crfg.org*

**Community Alliance with Family Farmers**
Post Office Box 363
Davis, CA 95617
Phone: (530) 756-8518
Fax: (530) 756-7857
Website: *www.caff.org*

**Network for a Healthy California**
California Department of Public Health
Post Office Box 997377
Sacramento, CA 95899-7377
Phone: (916) 449-5417
Fax: (916) 449-5415
Website: *www.harvestofthemonth.com*

**Produce for Better Health Foundation**
7465 Lancaster Pike, Suite J, 2nd Floor
Hockessin, DE 19707
Phone: (888) 391-2100
Fax: (302) 235-5555
Website: *www.fruitsandveggiesmorematters.org*

## Apples

**California Apple Commission**
770 East Shaw, Suite 310
Fresno, CA 93710
Phone: (559) 225-3000
Fax: (559) 225-3111
Website: *www.calapple.org*

**United States Apple Association**
8233 Old Courthouse Road, Suite 200
Vienna, VA 22182
Phone: (703) 442-8850
Fax: (703) 790-0845
Website: *www.usapple.org*

## Apricots

**Apricot Producers of California**
2111 Geer Road, Suite 611
Turlock, CA 95382
Phone: (209) 632-9777
Fax: (209) 632-9779
Website: *www.apricotproducers.com*

# Agricultural Organizations

## Artichokes

**California Artichoke Advisory Board**
Post Office Box 474
Castroville, CA 95012
Phone: (831) 633-4411
Fax: (831) 633-0215
Website: *www.artichokes.org*

## Asparagus

**California Asparagus Commission**
1432 McCabe Cove
El Centro, CA 92243
Phone: (760) 356-4906
Email: *ccwatte@calasparagus.com*
Website: *www.calasparagus.com*

## Avocados

**California Avocado Commission**
12 Mauchly, Suite L
Irvine, CA 92618-6305
Phone: (949) 341-6305
Fax: (949) 341-1970
Website: *www.avocado.org*

**Calavo Growers of California**
1141-A Cummings Road
Santa Paula, CA 93060
Phone: (805) 525-1245
Website: *www.calavo.com*

## Beans

**California Dry Bean Board**
531-D North Alta Avenue
Dinuba, CA 93618-3203
Phone: (559) 591-4866
Fax: (559) 591-5744
Website: *www.calbeans.org*

## Blueberries

**California Blueberry Association**
770 E Shaw Avenue, Suite 310
Fresno, CA 93710
Phone: (559) 225-3395
Website: *www.calblueberry.org*

**U.S. Highbush Blueberry Council**
80 Iron Point Circle, Suite 114
Folsom, CA 95630-8593
Phone: (916) 983-0111
Fax: (916) 983-9022
Website: *www.blueberry.org*

## Cantaloupe

**California Cantaloupe Advisory Board**
531-D North Alta Avenue
Dinuba, CA 93618
Phone: (559) 591-5715
Fax: (559) 591-5744
Website: *www.cmrb.org*

## Carrots

**Grimmway Farms**
Post Office Box 81498
Bakersfield, CA 93380
Phone: (800) 301-3101
Website: *www.grimmway.com*

## Cherries

**California Cherry Advisory Board**
1521 I Street
Sacramento, CA 95814
Phone: (916) 441-1063
Fax: (916) 446-1063
Website: *www.calcherry.com*

# Agricultural Organizations

**Cherry Marketing Institute**
Post Office Box 30285
Lansing, MI 48909-7785
Phone: (517) 669-4264
Email: *info@choosecherries.com*
Website: *www.choosecherries.com*

## Corn

**National Corn Growers Association**
632 Cepi Drive
Chesterfield, MO 63005
Phone: (636) 733-9004
Fax: (636) 733-9005
Website: *www.ncga.com*

## Cranberries

**Cape Cod Cranberry Growers' Association**
2 Carver Square
Carver, MA 02330
Phone: (508) 866-7878
Fax: (508) 866-4220
Email: *info@cranberries.org*
Website: *www.cranberries.org*

## Dates

**California Date Administrative Committee**
Post Office Box 1736
Indio, CA 92201
Phone: (800) 223-8748
Fax: (760) 347-6374
Email: *dates2000@earthlink.net*
Website: *www.datesaregreat.com*

## Figs

**California Fig Advisory Board**
600 West Shaw Avenue, Suite 300
Fresno, CA 93704
Phone: (559) 243-8600
Fax: (559) 243-8605
Email: *info@californiafigs.com*
Website: *www.californiafigs.com*

## Grapefruit

**California Citrus Growers Association**
1019 North Demaree, Suite B
Visalia, CA 93291
Phone: (559) 622-9758
Fax: (599) 622-9840
Website: *www.calcitrusgrowers.com*

## Grapes

**California Table Grape Commission**
392 West Fallbrook, Suite 101
Fresno, CA 93711-6150
Phone: (559) 447-8350
Fax: (559) 447-9184
Website: *www.tablegrape.com*

**Concord Grape Association**
5775 Peachtree-Dunwoody Road, Suite 500-G
Atlanta, GA 30342
Phone: (404) 252-3663
Fax: (404) 252-0774
Website: *www.concordgrape.org*

**California Association of Winegrape Growers**
1325 J Street, Suite 1560
Sacramento, CA 95814
Phone: (800) 241-1800
Fax: (916) 379-8999
Website: *www.cawg.org*

# Agricultural Organizations

## Kiwifruit

**California Kiwifruit Commission**
1521 I Street
Sacramento, CA 95814
Phone: (916) 441-0678
Fax: (916) 446-1063
Website: *www.kiwifruit.org*

## Lemons

**California Citrus Growers Association**
1019 North Demaree, Suite B
Visalia, CA 93291
Phone: (559) 622-9758
Fax: (599) 622-9840
Website: *www.calcitrusgrowers.com*

## Lettuce

**Leafy Greens Council**
33 Pheasant Lane
St. Paul, MN 55127
Phone: (651) 484-7270
Website: *www.leafy-greens.org*

## Mushrooms

**American Mushroom Institute**
1284 Gap Newport Pike, Suite 2
Avondale, PA 19311
Phone: (610) 268-7483
Fax: (610) 268-8015
Email: *MushroomNews@kennett.net*
Website: *www.americanmushroom.org*

**Mushroom Council**
2880 Zanker Road, Suite 203
San Jose, CA 95134
Phone: (408) 432-7210
Fax: (408) 432-7213
Email: *info@mushroomcouncil.org*
Website: *www.mushroominfo.com*

## Olives

**California Olive Committee**
770 East Shaw Avenue, Suite 310
Fresno, CA 93710
Phone: (559) 456-9096
Fax: (559) 456-9099
Website: *www.calolive.org*

**California Olive Oil Council**
801 Camelia Street, Suite D
Berkeley, CA 94710
Phone: (888) 718-9830
Fax: (510) 898-1530
Website: *www.cooc.com*

## Onions

**National Onion Association**
822 7th Street, Suite 510
Greeley, CO 80631
Phone: (970) 353-5895
Fax: (970) 353-5897
Website: *www.onions-usa.org*

## Oranges

**California Citrus Growers Association**
1019 North Demaree, Suite B
Visalia, CA 93291
Phone: (559) 622-9758
Fax: (599) 622-9840
Website: *www.calcitrusgrowers.com*

## Papayas

**Calavo Growers of California**
1141-A Cummings Road
Santa Paula, CA 93060
Phone: (805) 525-1245
Website: *www.calavo.com*

# Agricultural Organizations

## Peaches

**California Cling Peach Board**
c/o Echo Communications
1195 Park Avenue, Suite 212
Emeryville, CA 94608
Phone: (510) 654-5400
Fax: (510) 654-5402
Email: *calclingpeach@echopr.com*
Website: *www.calclingpeach.com*

**California Canning Peach Association**
2300 River Plaza Drive, Suite 110
Sacramento, CA 95833
Phone: (916) 925-9131
Fax: (916) 925-9030
Website: *www.calpeach.com*

## Pears

**California Pear Advisory Board**
1521 I Street
Sacramento, CA 95814
Phone: (916) 441-0432
Fax: (916) 446-1063
Website: *www.calpear.com*

**Pear Bureau Northwest**
4382 SE International Way
Milwaukie, OR 97222-4635
Phone: (503) 652-9720
Fax: (503) 652-9721
Website: *www.usapears.org*

## Persimmons

**California Fuyu Growers Association**
Post Office Box 1301
Valley Center, CA 92082
Email: *jlbathgate@worldnet.att.net*
Website: *www.sdfarmbureau.org/fuyu*

## Potatoes

**United States Potato Board**
7555 East Hampden Avenue, Suite 412
Denver, CO 80231
Phone: (303) 369-7783
Fax: (303) 369-7718
Website: *www.potatogoodness.com*

## Prunes (Dried Plums)

**California Dried Plum Board**
3840 Rosin Court, Suite 170
Sacramento, CA 95834
Phone: (916) 565-6232
Fax: (916) 565-6237
Website: *www.californiadriedplums.org*

## Raisins

**California Raisin Marketing Board**
2445 Capitol Street, Suite 200
Fresno, CA 93721
Phone: (559) 248-0287
Fax: (559) 224-7016
Email: *info@raisins.org*
Website: *www.calraisins.org*

**Sun-Maid Growers of California**
13525 South Bethel Avenue
Kingsburg, CA 93631
Phone: (559) 896-8000
Fax: (559) 897-6209
Website: *www.sunmaid.com*

## Spinach

**Fresh Express**
Post Office Box 80599
Salinas, CA 93901
Phone: (831) 772-6054
Fax: (831) 759-4782
Website: *www.freshexpress.com*

# Agricultural Organizations

## Strawberries

**California Strawberry Commission**
Post Office Box 269
Watsonville, CA 95077-0269
Phone: (831) 724-1301
Fax: (831) 724-5973
Email: *info@calstrawberry.com*
Website: *www.calstrawberry.com*

## Sweet Potatoes

**North Carolina Sweet Potato Commission**
700 E Parrish Drive, Suite C
Benson, NC 27504
Phone: (919) 894-1067
Fax: (919) 894-7018
Website: *www.ncsweetpotatoes.com*

**Sweet Potato Council of California**
Post Office Box 366
Livingston, CA 95334
Phone: (209) 358-1685
Fax: (209) 358-2750
Website: *www.cayam.com*

## Tangerines

**California Citrus Growers Association**
1019 North Demaree, Suite B
Visalia, CA 93291
Phone: (559) 622-9758
Fax: (599) 622-9840
Website: *www.calcitrusgrowers.com*

## Tomatoes

**California Tomato Farmers**
1521 I Street
Sacramento, CA 95814
Phone: (916) 441-3010
Fax: (916) 446-1063
Website: *www.californiatomatofarmers.com*

**California Tomato Growers Association**
2300 River Plaza Drive, Suite 100
Sacramento, CA 95833
Phone: (916) 925-0225
Fax: (916) 925-0213
Website: *www.ctga.org*

## Watermelon

**National Watermelon Promotion Board**
3361 Rouse Road, Suite 150
Orlando, FL 32817
Phone: (877) 599-9595
Fax: (407) 657-2213
Website: *www.watermelon.org*

# Related Websites

This list is offered as an informational resource only. It contains websites established by various entities and at the time of printing related to nutrition and agriculture. The list is not considered to be all-inclusive.

The entities or contents of the sites on this list are not endorsed by the California Foundation for Agriculture in the Classroom or by the authors of *Edible Plant Parts*.

**4-H**
*www.4-h.org*

**Alliance for a Healthier Generation**
*www.healthiergeneration.org*

**American Farm Bureau Foundation for Agriculture**
*www.agfoundation.org*

**American Dietetic Association**
*www.eatright.org*

**American Heart Association**
*www.americanheart.org*

**American School Health Association**
*www.ashaweb.org*

**California Foundation for Agriculture in the Classroom**
*www.LearnAboutAg.org*

**California Farm Bureau Federation**
*www.cfbf.com*

**Champions for Change**
*www.cachampionsforchange.cdph.ca.gov*

**Community Alliance for Family Farmers**
*www.caff.org*

**Fruits and Veggies: More Matters**
*www.fruitsandveggiesmorematters.org*

**Harvest of the Month**
*www.harvestofthemonth.com*

**MyPlate**
*www.choosemyplate.gov*

**National Foundation for Agriculture in the Classroom**
*www.agclassroom.org*

**Nutrition**
*www.nutrition.gov*

**Produce for Better Health Foundation**
*www.pbhfoundation.org*

**The Great Plant Escape**
*www.urbanext.illinois.edu*

# Related Literature

Aboff, Marcie. ***The Fantastic Fruit Group***. Capstone Press, 2012. This comic-style book will help readers understand the various types of fruits, how they are grown, and how they contribute to MyPlate. ISBN 978-1-4296-6090-7

Adler, Karen. ***California Fruit Raps***. Karen Adler Books, 2007. After singing along with Karen Adler, students will be motivated to make healthy choices by visiting the produce section at the market. This interactive CD and song book motivates students to eat California fruits. ISBN 978-0967977256

Adler, Karen. ***The Story of Raisins***. Karen Adler Books, 2005. This nonfiction story tells how raisins were discovered and how they are grown. ISBN 978-0-9679772-3-2

Adamson, Heather. ***A Day in the Life of a Farmer***. Capstone Press, 2003. Spend a day with Farmer Dave in his Midwest farm as he feeds animals, drives a tractor, and brings in the harvest. ISBN 978-0-7368-2283-1

Amstutz, Lisa J. ***Which Seed Is This?*** Capstone Press, 2012. Seeds come in many shapes and sizes. Through the picture book, learn which seeds will grow into which fruits, vegetables, or flowers. ISBN 978-1-4296-7552-9

Bodach, Vijaya Khisty. ***Seeds***. Capstone Press, 2007. This book describes how seeds are spread, what they need to grow into plants, and some that are good to eat. ISBN 978-0-7368-9623-8

California School Garden Network. ***Gardens for Learning***. California School Garden Network, 2006. This comprehensive guidebook provides a strong foundation to support the growing school garden movement. ISBN 978-0-9788693-0-4

Dickmann, Nancy. *Vegetables (Healthy Eating with MyPlate)* . Heinemann-Raintree, 2012. In this book, learn about vegetables and their nutritional benefits. ISBN 978-1-4329-6974-9

Durrant, Lynda. ***The Sun, the Rain, and the Apple Seed***. Clarion Books, 2003. Historical fiction about real-life American folk hero Johnny Appleseed. ISBN 978-0-618-23487-5

# Related Literature

Farmer, Jacqueline. ***Apples***. Charlesbridge, 2007. This educational book features the history, uses, and anatomy of apples. Also includes recipes and nutritional information. ISBN 978-1-57091-694-6

Gibbons, Gail. ***The Vegetables We Eat***. Holiday House, 2008. Enjoy a wealth of information about a variety of vegetables, from how they are planted to how they get to stores. ISBN 978-0-8234-2153-4

Guillain, Charlotte. ***Spot the Difference: Flowers***. Heinemann Library, 2008. This book introduces children to the parts of a flower using intriguing photos of a variety of plants to provide child-friendly examples. ISBN 978-1-4329-0952-9

Guillain, Charlotte. ***Spot the Difference: Seeds***. Heinemann Raintree, 2008. Learn about seeds and how they are different from plant to plant. ISBN 978-0-431-19232-1

Hesser, Leon. ***The Man Who Fed the World***. Durban House, 2009. A biography of Dr. Norman Borlaug, Nobel Peace Prize recipient for averting hunger and famine. He is credited with saving hundreds of millions of people from starvation. ISBN 978-0-9818486-6-2

Hewitt, Sally. ***Your Food***. Crabtree Publishing, 2009. Engage students with information about where their food comes from and how they can eat healthfully. ISBN 978-0-7787-4106-0

Hopkinson, Deborah. ***A Packet of Seeds***. HarperCollins, 2004. A packet of seeds brings hope to a pioneer family as they leave their home and journey west. ISBN 978-0-06-009089-0

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# Matrix of Standards 2nd Grade

| Standard | Description | Why People Need Plants | Dig 'Em Up | Snappy Stems | Luscious Leaves | Fabulous Flowers | Freshest Fruits | Supreme Seeds | Edible Plant Game | Eat 'Em Up |
|---|---|---|---|---|---|---|---|---|---|---|
| **Science** | | | | | | | | | | |
| Life Sciences 2a | Students know that organisms reproduce offspring of their own kind and that the offspring resemble their parents and one another. | | x | | | | x | | | |
| Life Sciences 2d | Students know there is variation among individuals of one kind within a population. | | x | x | | | | | | |
| Life Sciences 2e | Students know light, gravity, touch, or environmental stress can affect the germination, growth, and development of plants. | | x | | | | | | | |
| Life Sciences 2f | Students know flowers and fruits are associated with reproduction in plants. | | | | | | x | x | | |
| Earth Sciences 3c | Students know that soil is made partly from weathered rock and partly form organic materials and that soils differ in their color, texture, capacity to retain water, and ability to support the growth of many kinds of plants. | x | | | | | | | | |
| Earth Sciences 3e | Students know rock, water, plants, and soil provide many resources, including food, fuel, and building materials, that humans use. | x | | x | x | x | | | | |
| Investigation & Experimentation 4b | Measure length, weight, temperature, and liquid volume with appropriate tools and express those measurements in standard metric system units. | | x | | x | | x | | | |
| Investigation & Experimentation 4c | Compare and sort common objects according to two or more physical attributes. | | | | x | | | x | x | |
| Investigation & Experimentation 4e | Construct bar graphs to record data, using appropriately labeled axes. | | | | x | | x | | | |
| Investigation & Experimentation 4f | Use magnifiers or microscopes to observe and draw descriptions of small objects or small features of objects. | | x | | | | | | | |
| Investigation & Experimentation 4g | Follow oral instructions for a scientific investigation. | | x | | x | | x | | x | |

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|---|---|---|---|---|---|---|---|---|---|---|
| **Next Generation Science** | | | | | | | | | | |
| 2-LS2-1 Ecosystems | Plan and conduct an investigation to determine if plants need sunlight and water to grow. | | x | | | | | | | |
| 2-LS2-2 Ecosystems | Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. | | | | | x | | | | |
| 2-LS2.A Interdependent Relationships in Ecosystems | Plants depend on water and light to grow.<br><br>Plants depend on animals for pollination or to move their seeds around. | x | | | | | x | | x | |
| 2-LS4-1 Biological Evolution | Make observations of plants and animals to compare the diversity of life in different habitats. | | | x | x | | | | | |
| 2-PS1-1 Matter & Its Interactions | Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. | | | | | | | x | | |
| 2-PS1-3 Matter & Its Interactions | Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. | | | | | | | x | | |
| **English Language Arts** | | | | | | | | | | |
| Reading Informational Text 1 | Ask and answer such questions such as who, what, where, when, why, and how to demonstrate understanding of key details in a text. | | | | | | | | x | x |
| Reading Informational Text 7 | Explain how specific images contribute to and clarify a text. | | | | x | x | | | | |
| Reading Informational Text 10 | By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts. | | | | | | | x | x | x |
| Writing 8 | Recall information from experiences or gather information from provided sources to answer a question. | x | x | | x | | x | | | |

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|---|---|---|---|---|---|---|---|---|---|---|
| Speaking & Listening 1a | Follow agreed-upon rules for discussions. | x | x | | x | | x | | | |
| Speaking & Listening 1b | Build on others' talk in conversations by linking their comments to the remarks of others. | x | x | | x | | x | | | |
| Speaking & Listening 1c | Ask for clarification and further explanation as needed about the topics and texts under discussion. | x | x | | x | | x | | | |
| Speaking & Listening 3 | Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue. | | x | | | | | | | x |
| **Mathematics** | | | | | | | | | | |
| Measurements & Data 1 | Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. | | | | x | | | | | |
| Measurements & Data 4 | Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. | | | | x | | | | | |
| **Health** | | | | | | | | | | |
| 1.1N Nutrition | Classify various foods into appropriate food groups | x | | | x | | | x | | |
| 1.2N Nutrition | Identify the number of servings of food from each food group that a child needs daily. | x | | | x | | | | x | x |
| 1.4N Nutrition | List the benefits of healthy eating. | x | | | | | x | | | x |
| 1.6N Nutrition | Describe how to keep food safe from harmful germs. | | | | | | | | | x |
| 1.7N Nutrition | Identify a variety of healthy snacks. | x | | x | | x | x | | x | x |
| 1.9N Nutrition | Explain how both physical activity and eating habits can affect a person's health. | x | | | | | | | | |

# Matrix of Standards 2nd Grade

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|---|---|---|---|---|---|---|---|---|---|---|
| 3.1N Nutrition | Identify resources for reliable information about healthy foods. | | | | | | | | | x |
| 6.1N Nutrition | Set a short-term goal to choose healthy foods for snacks and meals. | | | | | | | | | x |
| 8.1N Nutrition | Practice making healthy eating choices with friends and family. | | | | | | | | | x |
| **History-Social Science** | | | | | | | | | | |
| 2.4.1 People Who Make a Difference | Describe food production and consumption long ago and today, including the roles of farmers, processors, distributors, weather, and land and water resources. | x | | x | | | x | | | |
| 2.4.2 People Who Make a Difference | Understand the role and interdependence of buyers (consumers) and sellers (producers) of goods and services. | | | | | | x | | | |
| **Visual Arts** | | | | | | | | | | |
| 1.1 Artistic Perception | Perceive and describe repetition and balance in nature, the environment, and in works of art. | | | | | | | x | | |
| 2.1 Creative Expression | Demonstrate beginning skill in the use of basic tools and art-making processes, such as printing, crayon rubbings, collage, and stencils. | | | | | | | x | | |
| 2.2 Creative Expression | Demonstrate beginning skill in the use of art media, such as oil pastels, watercolors, and tempera. | | | | | | | x | | |
| 5.1 Connections and Applications | Use placement, overlapping, and size differences to show opposites. | | | | | | | x | | |

# Matrix of Standards
# 3rd Grade

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|---|---|---|---|---|---|---|---|---|---|---|
| **Science** | | | | | | | | | | |
| Life Sciences 3a | Students know plants and animals have structures that serve different functions in growth, survival, and reproduction. | | x | x | x | x | x | | x | |
| Life Sciences 3d | Students know when the environment changes, some plants and animals survive and reproduce; others die or move to new locations. | | x | | | | | | | |
| Investigation & Experimentation 5c | Use numerical data in describing and comparing objects, events, and measurements. | | x | | x | | | | x | |
| Investigation & Experimentation 5e | Collect data in an investigation and analyze those data to develop a logical conclusion. | | | | | | | | x | |
| **Next Generation Science** | | | | | | | | | | |
| 3-LS1-1 From Molecules to Organisms | Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. | | | | | x | | | | |
| 3-LS1.B Growth & Development of Organisms | Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. | | | | | | x | | | |
| 3-LS3-1 Heredity | Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. | | | | x | | | | | |
| 3-LS3-2 Heredity | Use evidence to support the explanation that traits can be influenced by the environment. | | x | | | | | | | |
| **English Language Arts** | | | | | | | | | | |
| Reading Informational Text 1 | By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2–3 text complexity band independently and proficiently. | | | | | | | | x | x |

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|---|---|---|---|---|---|---|---|---|---|---|
| Reading Informational Text 7 | Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur). | | | | x | x | | | | |
| Reading Informational Text 10 | By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts. | | | | | | | | x | x |
| Writing 8 | Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. | x | x | | x | | x | | | |
| Speaking & Listening 1a | Come to discussions prepared having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion. | x | x | | x | | x | | | |
| Speaking & Listening 1b | Follow agreed-upon rules for discussion. | x | x | | x | | x | | | |
| Speaking & Listening 1c | Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others. | x | x | | x | | x | | | |
| **Mathematics** | | | | | | | | | | |
| Measurements & Data 4 | Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. | | x | | x | | | | | |
| **History-Social Science** | | | | | | | | | | |
| 3.1.2 Continuity & Change | Trace the ways in which people have used the resources of the local region and modified the physical environment. | | | | | | x | | | |
| 3.3.2 Continuity & Change | Describe the economies established by settlers and their influence on the present-day economy, with emphasis on the importance of private property and entrepreneurship. | | | | | | x | | | |

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# 3rd Grade

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|---|---|---|---|---|---|---|---|---|---|---|
| 3.5.1 Continuity & Change | Describe the ways in which local producers have used and are using natural resources, human resources, and capital resources to produce goods and services in the past and the present. | x | | x | | | x | | | |
| **Health** | | | | | | | | | | |
| 2.1G Growth & Development | Explain how individual behaviors and one's family and school influence growth and development. | | | | | | | | | x |
| 7.1G Growth & Development | Determine behaviors that promote healthy growth and development. | | | | | | | | | x |
| 6.1M Mental, Emotional, & Social Health | Make a plan to help at home and show responsibility as a family member. | | | | | | | | | x |
| 6.1P Personal & Community Health | Set a short-term goal for positive health practices. | | | | | | | | | x |
| 8.1P Personal & Community Health | Support others in making positive health choices. | | | | | | | | | x |
| **Visual Arts** | | | | | | | | | | |
| 1.1 Artistic Perception | Perceive and describe rhythm and movement in works of art and in the environment. | | | | | | | x | | |
| 1.5 Artistic Perception | Identify and describe elements of art in works of art, emphasizing line, color, shape/form, texture, space, and value. | | | | | | | x | | |

# Glossary

**Agriculture**: The science and business of growing crops and raising livestock.

**Ascorbic acid**: Another name for vitamin C; necessary in the body for healthy cells.

**Bulb**: An underground bud which enables a plant to live through winter; formed of stem and surrounded by fleshy leaves.

**Citric acid**: An organic acid which acts as a natural preservative. It is also used to add an acidic, or sour, taste to foods and beverages.

**Climate**: The weather conditions of a region, such as temperature, air pressure, humidity, precipitation, sunshine, cloudiness, and winds.

**Commodity**: Fruits, vegetables, nuts, or grains, as a unit that are bought or sold.

**Conservation**: The careful use of resources such as water.

**Consumer**: A person or thing that eats or uses something.

**Crop**: An agricultural plant grown and harvested.

**Cup equivalent**: The amount of a food product that is considered equal to 1 cup from the vegetable, fruit, or milk food group. A cup equivalent for some foods may be less than a measured cup because the food has been concentrated *(such as raisins or tomato paste)*, or more than a cup for some foods that are airy in their raw form and do not compress well into a cup *(such as salad greens)*.

**Discoloration**: A change in color.

**Distribution center**: A place where food or other items are stored until they are transported to a store, wholesale market, or elsewhere.

**Edible**: Something that can be eaten.

**Embryo**: A tiny plant within a seed.

**Farm**: A piece of land where crops or animals are raised.

# Glossary

**Farmer**: A person who produces food, fiber, or plants, for others to use.

**Fiber**: An indigestible carbohydrate found in plant foods that is important to the health of the digestive tract.

**Fibrous root system**: A root system of fine, shallow, branching roots with no single large tap root. Plants such as grasses have fibrous root systems.

**Flatbed**: A truck or trailer without sides.

**Fruit**: Scientifically speaking, the matured ovary of a flower and its contents; some fruits such as squash are called vegetables because they are vegetation that is prepared for the table.

**Fungus**: A simple plant that lacks chlorophyll. Fungi get their food from decaying material.

**Flower**: The reproductive part of a plant. The color, shape, and fragrance of the flowers aid in pollination, which leads to seed production.

**Geography**: The mountains, valleys, lakes, rivers, and other physical elements that make up an area.

**Grain**: A small hard seed of a cereal plant such as wheat or rice.

**Harvest**: The gathering of a crop.

**Leaf**: The flat, thin expanded part of a plant that branches off the stem. Leaves are the main site of photosynthesis.

**Map**: A picture that represents all or part of the Earth's surface.

**MyPlate**: Developed by the United States Department of Agriculture, a visual cue that reminds consumers how to make healthy food choices. MyPlate replaced MyPyramid in 2011.

**Nutrient**: A chemical component of food that is essential, in some quantity, to a living organism.

# Glossary

**Nutrition**: The interaction between food and a living organism.

**Ounce equivalent**: The amount of a food product that is considered equal to 1 ounce from the grain group or the protein foods group. An ounce equivalent for some foods may be less than a measured ounce if the food is concentrated or low in water content *(nuts, peanut butter, dried meats, or flour)*, or more than an ounce if the food contains a large amount of water *(tofu, cooked beans, cooked rice, or cooked pasta).*

**Oxidation**: The interaction between oxygen molecules and all the different substances they may contact, from metal to living tissue.

**Percent Daily Value**: The recommended amount of a nutrient to eat each day to stay healthy. The values on the label are based on a 2,000-calorie diet.

**Phloem**: Specialized plant cells that transport food throughout the plant.

**Photosynthesis**: The process by which plants make their food using sunlight, water, and carbon dioxide.

**Pollen basket**: The concave surface on the outer hind leg of the honey bee that is fringed with long, curved hairs to catch pollen.

**Proboscis**: The long, slender, hairy tongue of the honey bee that acts like a straw to bring nectar from the flower to the bee's mouth.

**Produce**: Fresh fruits and vegetables.

**Root**: The underground part of a plant. The root's functions are to anchor the plant, absorb water and minerals, and store food.

**Seed**: The part of a flowering plant that contains an embryo within its protective coat and a stored food supply.

**Scientific method**: The techniques scientists use for investigating phenomena and acquiring new knowledge.

**Stem**: The main supportive part of a plant; part of the transport system carrying water from the roots and food produced during photosynthesis to other parts of the plant.

# Glossary

**Tap root system**: Tap root systems consist of a single, large root that grows deep into the soil. Smaller lateral roots branch off of the tap root. An example of a plant with a taproot is a dandelion.

**Tuber**: The short, thickened, fleshy part of an underground stem, which can grow new shoots. A potato is a tuber.

**Vegetable**: The edible part of a plant which is generally served as part of a main meal; also known as vegetation that is prepared for the table.

**Vitamins**: A group of essential nutrients used in small quantities to regulate body processes.

**Xylem**: Specialized plant cells that transport water throughout the plant.