

# Taste and Teach

## January - Carrots



### Five **Fun Facts** About Carrots!

- Most of the nation's fresh carrots are grown in Kern County.
- Ancient Greeks and Romans used carrots for medicinal purposes.
- Commercial carrots are mechanically harvested by first loosening the soil underneath the root, then lifting the carrots by their tops.
- Carrots come in many colors including orange, white, yellow, and purple.
- Beta-carotene is known to assist with night vision.

### Three **Fun Teaching Ideas!**

- Make a carrot-shaped book showing the history of the carrot and interesting carrot facts.
- Place a freshly cut carrot top in a shallow dish of water and watch it grow.
- Inside a large drawing of a carrot, write the many nutrients provided by carrots.

*Explore all the great carrot resources in this section.*



# Fresh Carrots

Information compiled by the California Fresh Carrot Advisory Board

**How Produced** – Carrots, an annual root crop, must be planted in soil that is free of disease and organisms that might affect their color, shape, or texture. This sometimes requires fumigation of the soil. The tiny carrot seeds, 2-3 millimeters in length, are planted in raised beds so the carrots are in position for mechanized harvesting. The growing season ranges from 110 to 180 days, depending upon the time of year, growing conditions, and desired size.

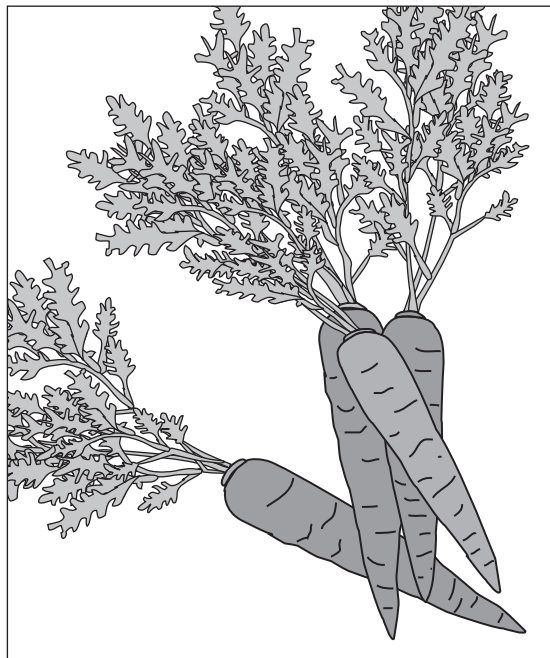
After loosening the earth under the mature carrots, large, self-propelled harvesters lift the carrots by their tops, remove the tops, and load the carrots into a truck and trailer which travel alongside the harvester. The carrots are rushed to packing plants, cooled to 34°F, sorted, cleaned, and packaged within 24 hours of harvest.

**History** – Carrots, originally cultivated in Central Asia and the Near East, were introduced to the American colonies in the seventeenth century. They were not originally yellow-orange, but a range of purple colors. It is thought that the yellow root evolved from a mutant variety which lacked the purple pigment. Ancient Greeks and Romans used both the purple and yellow varieties for medicinal purposes.

Carrots were first used for food by Europeans during the Middle Ages. In the nineteenth century, carrots were identified as a rich source of beta-carotene. During World War II, British aviators were fed a specially developed English carrot, high in beta-carotene, to overcome night blindness. Plant geneticists continue to develop carrots with higher beta-carotene content, as well as strains that are sweeter and more tender.

**Varieties** – While there are many varieties of carrots, most consumers are unable to tell one from another since there are only slight differences in taste, shape, or size. Varieties are bred for particular growing regions or specific uses. Normally, carrots grown for the supermarket produce shelf are found in cello bags and are purposely cultivated to be larger than carrots for the baby-cut market. Baby-cut carrots are not necessarily small carrots, but are made from full-grown, small diameter carrots by peeling and cutting them to the desired length. Farmers plant carrots intended for the baby-cut market closer together so the roots stay slim and there is less waste

when the carrots are cut to size. Conveniently packaged to be ready-to-eat, baby-cut carrots keep in the refrigerator in their original bag for up to three weeks.



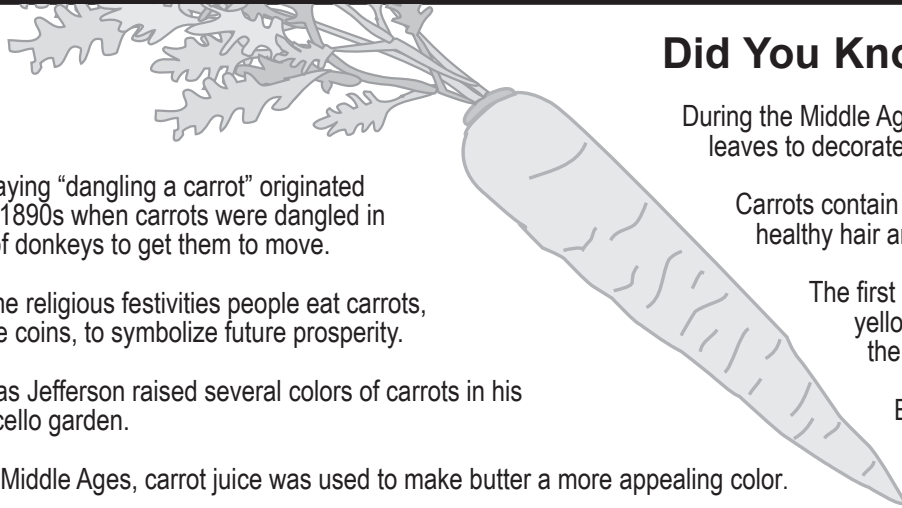
**Commodity Value** – There were production increases of approximately 30% during the late 1990s because of the rather sudden popularity of baby-cut carrots. The market for fresh carrots has leveled off since the turn of the century. In 2018, California harvested 64,000 acres of carrots, bringing in a crop of 1,440,300,000 pounds valued at \$663.6 million dollars. Baby-cut carrots account for 70% of the acreage. Besides fresh carrots still being available in the familiar cello package as well as the very popular baby-cut carrots, consumers are now also able to find fresh carrots in other convenient shapes such as sticks, coins and chips, as well as shredded carrots for salads.

**Top Producing Counties** – Approximately 80% of the nation's fresh carrots are grown year-round in California. Most are grown in and shipped from Kern County. Other growing regions include Imperial County, Riverside County, Monterey County, and Madera County.

**Nutritional Value** – Carrots are an excellent source of beta-carotene and a good source of fiber. Beta-carotene, the plant pigment that gives carrots their vivid orange color, is converted by the human body to vitamin A. Surplus amounts of beta-carotene are stored in the body's fat cells. One medium carrot provides four times the Daily Value of vitamin A which helps maintain the health of eyes and skin and reduces the risk of certain cancers. Carrots are fat-free and contain other essential elements in low amounts including vitamin C, potassium, calcium, phosphorus, and magnesium.

**For additional information:**  
California Fresh Carrot Advisory Board  
(559) 591-5675

# Fresh Carrot Activity Sheet



## Did You Know?

During the Middle Ages, French women used carrot leaves to decorate hair and hats.

Carrots contain beta-carotene, which helps build healthy hair and nails and keeps eyes healthy.

The first carrots were white, purple, and yellow. In the 1600s, the Dutch developed the orange carrot we eat today.

Early American colonists grew carrots between rows of tobacco to repel beetles.

The saying “dangling a carrot” originated in the 1890s when carrots were dangled in front of donkeys to get them to move.

In some religious festivities people eat carrots, cut like coins, to symbolize future prosperity.

Thomas Jefferson raised several colors of carrots in his Monticello garden.

In the Middle Ages, carrot juice was used to make butter a more appealing color.

## Lesson Ideas

- Read “The Carrot Seed” by Ruth Kraus.
- Make a list of edible roots.
- Research taproots and fibrous roots and find examples in your garden.
- Make a carrot-shaped book showing the history of the carrot and interesting carrot facts.
- Visit the cafeteria to see ways carrots are prepared.
- Ask a professional chef to discuss and demonstrate the many uses of fresh carrots.
- Place a freshly cut carrot top in a shallow dish of water and watch it grow.
- Estimate, then count, the number of baby carrots in a bag.
- Visit a grocery store and make a list of the ways fresh carrots are available to consumers.
- Inside a large drawing of a carrot, write the many nutrients provided by carrots.
- Research and discuss how scientists determine the amount of beta-carotene in a carrot.

## Fantastic Facts

1. Most of the nation's fresh carrots are grown in Kern County.
2. Beta-carotene is known to assist with night vision.
3. The main reason for the recent increase in carrot production is ready-to-eat, convenient packaging of baby carrots.
4. Carrots come in many colors including orange, white, yellow, and purple.
5. Commercial carrots are mechanically harvested by first loosening the soil underneath the root, then lifting the carrots by their tops.
6. Baby carrots are long, small-diameter carrots peeled and cut into pieces.
7. Ancient Greeks and Romans used carrots for medicinal purposes.

## Lesson Plan: Growing Carrots on the Mayflower

**Introduction:** Grow boxes are used where the soil is in poor condition or where weather is such that it is difficult to grow crops. Pilgrims used grow boxes on the Mayflower.

**Objective:** Students will grow carrots in grow boxes and record growth and other observations in a journal.

**California Standards:** CC ELA: W.3-8.7, SL.3-8.1, RST.6-8.3, WHST.6-8.2, 7; CC Math: 3.MD.4, 4.MD.4, 5.MD.2; NGSS: 3-LS1-1, 4-LS1-1, 5-LS1-1

**Materials:** 12-inch wide redwood boards, an area to build and place a garden box, nails, hammer, saw, soil mixed with nitrogen-based fertilizer, carrot seeds, water, journals for each student, resource materials about the Mayflower, Pilgrims and early colonists.

### Procedure:

Explain what a garden box is and brainstorm why and where people use them. Discuss the food conditions and challenges

Pilgrims encountered during their voyage to America and the building of their settlement. Why did they use grow boxes?

1. As a class or group, build a grow box that is at least 12 inches deep. Fill the box with soil and moisten.
2. Make rows 4 to 5 inches apart. Make a shallow furrow in each row and sprinkle seeds in the furrow. Cover the seeds with a dusting of soil.
3. As the carrots grow, thin the crop when the carrots are as thick around as an index finger, allowing four inches between plants.
4. Keep garden well watered and weeded. Harvest in 70-80 days.

**NOTE:** Throughout the growth of the carrots, have the students perform various assignments in their journals—observations, poems, find or create recipes, make invitations to a Carrot Fest, measure and graph root length and stem length, find out what to do with the carrot tops and peelings, etc.



## Tops or Bottoms

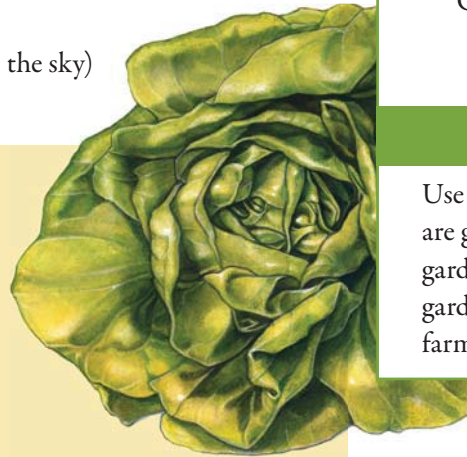
Encourage students to eat more fruits and vegetables by familiarizing them with the plant parts we eat.

### Activity

1. Read the book "Tops and Bottoms" by Janet Stevens.
2. Have all of the fruits and vegetables from the book in a basket. Discuss the fruits and the vegetables with the students.
3. As you pull random fruits and vegetables from the basket or grocery bag have students make the following gestures based on how the fruit or vegetable grows:
  - grows underground (touch their toes)
  - grows in the middle (crouch)
  - grow on top of the soil (stand tall with hands to the sky)

### Classroom Activities

- Divide a piece of paper into TOP, MIDDLE, and BOTTOM. Brainstorm fruits and vegetables for each category.
- Define these plant parts: stem, roots, fruits, flowers.
- Use California Department of Education's Fresh Fruit and Vegetable Photo Cards to enhance the activity:
  - ▷ Distribute one card per student and instruct them to sort themselves based on plant part we eat, color, calories (highest to lowest), major producing states, or alphabetically.
  - ▷ Introduce students to some of the less well-known fruits and vegetables.
  - ▷ Educate students about which part of the plant is commonly eaten.
    - ▷ Show students some of the ethnic fruits and vegetables found in California markets.
    - ▷ Learn where many of the fruits and vegetables are grown in the United States.
    - ▷ Learn the scientific name (family, genus, species) of the produce they are eating.
    - ▷ Determine the nutrient analysis of specific fruits and vegetables.
    - ▷ Teach students the Spanish names of fruits and vegetables.



### Materials

- Tops and Bottoms by Janet Stevens
- Grocery bag or basket
- Assortment of fruits and vegetables
- Photos of fruits and vegetables: Fresh Fruit and Vegetable Photo Cards, CDE.ca.gov (optional)

### Tip

Use fruits and vegetables that are growing in the school garden, from students' home gardens, or from a local farmers market.

### California Standards

#### Kindergarten

ELA CC: SL.K.1, 2; RI.K.1, 4, 10  
Physical Education Content: 1.1, 1.4, 1.8, 3.1 5.2, 5.4

#### Grade 1

ELA CC: RI.1.1, 4, 10; SL.1.1, 2  
Physical Education Content: 2.2, 3.1, 5.1, 5.2, 5.6

#### Grade 2

ELA CC: RI.2.1, 4, 10; SL.2.1, 2  
Physical Education Content: 1.2, 5.1, 5.2

#### Grade 3

ELA CC: RI.3.1, 4, 10; SL.3.1, 2



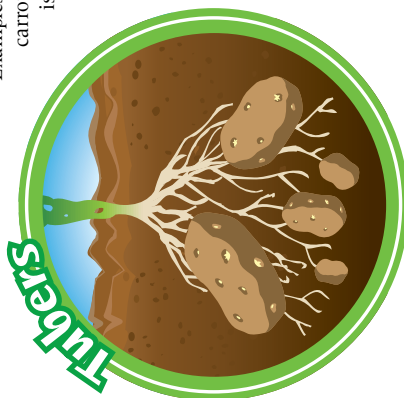


# Underground Edibles

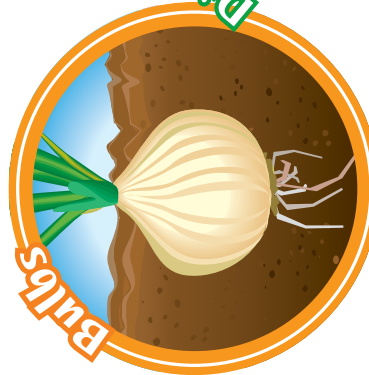
**R**oots, tubers, and bulbs are three examples of specialty crops that are grown underground. Each underground edible acts as a storage unit that provides the plant with the nutrients it needs to grow and bloom.

**Roots:** There are two different types of root systems: fibrous and tap. Fibrous roots are those that have many branches of the same size. Tap roots have a single large root. The tap root is the most common part of the plant that we eat.

Examples include carrots, beets, radishes, and turnips.



**Tubers** are underground plant structures that are enlarged to store plant nutrients. They are used by plants to survive the winter or dry months and provide energy and nutrients for re-growth during the growing season. Tubers have leathery skin and growing points where new plants can develop. Potatoes, yams, sweet potatoes, and Jerusalem artichokes are tubers.



**Bulbs** are planted in the ground and act as an underground storeroom. In the center of the bulb is a bud, ready to sprout when the environment is right. If you were to dissect the bulb, the bud inside looks like a miniature flower! The bud is surrounded by scales that contain nutrients the bulb will need to flower. Examples of bulbs are onions, garlic, green onions, and fennel.

## Underground Fun Facts:

In California, we grow more sweet potatoes than russet, red, white, and gold potatoes.

The majority of garlic grown in the United States comes from California.

Sulfuric compounds are what irritate your eyes and cause you to cry when cutting onions.

## Activity

It grows in soil, but can I eat it? There are many underground edibles that are a part of our diets! Rearrange the circled letters in the facts below to learn more about underground edibles.

The first food ever grown in outer space.

Used in the 1700s to provide feed for cattle during the winter.

Since the 1700s, it has been used as a natural dye.

Originally purple in color, this vegetable originated in central Asia.

## Nutritional Values:

These specialty crops are high in:

Carrots	Beta carotene and fiber
Garlic	Vitamins B6 and C
Radishes	Vitamin C and calcium
Beets	Vitamin A, vitamin C, calcium, and iron

## Did You Know?

Baby carrots are regular carrots cut into two inch pieces.

## Square Roots

If you have a garden space of 4.5 ft. x 4.5 ft., how many onion seeds can you plant? Determine the perimeter and area for the garden space.

Space requirements: Allow 2 inches between each seed and 18 inches between rows.

**Standards:** Mathematics – Grade 3: Measurement and Geometry 1.2, 1.4; Mathematical Reasoning 1.2, 3.1, 3.2, Grade 4: Measurement and Geometry 1.1, 1.4



## Activity

Can you grow a carrot using only the top 1/4 inch of a carrot root? Form a hypothesis and develop an experiment. Take measurements and record your observations over time.

**Standards:** Science – Grade 3: 3a, 3d, 5a, 5c, 5d, 5e; Grade 4: 3b, 6b, 6c; Grade 5: 2a, 6c, 6f; Grade 6: 7a, 7b; Grade 7: 5a, 7c; Grade 8: 9a

# *Imagine this...*



## **Carrot Civil War**

**By Sahib Sangha**

**2016 *Imagine this...* Story Writing Contest Winner**

**5th Grade, Shannon Ranch Elementary**

**Ann Fry, Teacher**

**Tulare County**

**T**hese were ancient times, and it was a time that Romans were having a huge festival. It was a lively day with carrots on display and at work. Women danced around with long, flowing hair decorated with luscious green carrot tops. All the girls had a strangely beautiful glow. This look was naturally achieved by devouring lots of carrots.

Around the corner, a group of donkeys was being moved away from the festivities. Juicy carrots were being dangled in front of the stubborn donkeys, which were more interested in staying right in the middle of the action. The smell of carrots filled the air.

Old wise men brewed medicines using carrots and a line was already forming of people who brought household items to trade for this magic potion. On this day, butchers were not cutting meat, but were busy slicing carrots into coin shapes, which people thought brought good luck. Children helped elders bottle small containers of carrot food coloring in deep purple and brilliant yellow colors.

They passed some on to bakers to mix into their butter, which turned the butter a stunning golden yellow color. With all the yellow and purple sights, it would seem as if these were the official colors of Rome.

While these colors complemented each other on land, underground these colors were being waved in a war, the Carrot Civil War. There was a Carrot Civil War happening, and this was no surprise. These fighting carrots were from an area of land owned by a poor farmer, who was not able to plant them in disease-free soil. Now, the carrots were all grown up, but their color, shapes, textures and critical-thinking skills had all been impacted.

The purple carrots were fighting the yellow carrots because they thought of them as mutants, since these carrots lacked the purple pigment. It was a hard battle because there were more purple carrots than yellow, but the yellow carrots had the biggest fighter. This yellow carrot weighed twenty pounds!



There were carrot tops flying left and right. Slices of carrots were all over the ground, which was not a sign of good luck, but a sign of being closer to defeat. The battle went on and on for days, without an end in sight.

“Stop!” cried a wise, old carrot. Word of the war had spread to nearby fields and the wise, old carrot hurried to the battlefield when he heard the news. The wise, old carrot had grown in the best soil. He was incredibly smart and could predict the future. He claimed that none of them would survive if they kept fighting.

He told them that, in the future, a new carrot would be born, the orange carrot. However, if the purple and yellow carrots did not survive, the fate of the orange carrot would be in jeopardy. The orange carrot would be important because it would help win wars. In a war named World War II, aviators would be given this magical carrot to beat night blindness. This new carrot would have higher levels of beta-carotene than any of the yellow and purple carrots. While this orange carrot would be the mightiest carrot, it would also be sweeter and more tender. This orange carrot would keep old and young people healthy.

Now, the carrots understood not to fight each other. They learned an important lesson. The color of the skin does not matter, it's what is inside that matters. What you can do for the world is what matters. Both sides dropped their yellow and purple flags and came together as one by raising an orange flag, which was a symbol of hope, peace, and greatness in the future. Hundreds of years later, an orange carrot was harvested and became a part of every kitchen! The wise, old carrot was right all along.

**Learn more about the “Imagine this.. Story Writing Contest”  
by visiting [LearnAboutAg.org/imaginethis](http://LearnAboutAg.org/imaginethis) !**

