California is called the golden state for many reasons, one being the bountiful amount of specialty crops produced here. What makes specialty crops so special? Specialty crops include fruit and tree nuts, vegetables, herbs and spices, floriculture, and horticulture crops. Specialty crops are crops that are grown and used by people for food, medicinal purposes, and/or aesthetic gratification. They are the nutritionally delicious almonds and celery in your school lunch, the olives on your pizza, the garlic and ginger that flavors your dinner, the cut flowers in holiday centerpieces, the trees in the park, and the herbs in your medicine. California produces more than 400 different commodities, many of which are specialty crops. They’re all around us!

Nearly half of the nutritious fruits, nuts, and vegetables consumed in the United States are produced right here in our state. From the southern California deserts to mountains in the north, California is home to a variety of soil and climate types that allow the state to produce a wide variety of specialty crops. California produces 99 percent or more of 14 commodities that are enjoyed throughout the United States, including almonds, artichokes, dates, figs, garlic, kiwifruit, olives, pistachios, and walnuts. These specialty crops, whether fresh, frozen, canned, dried, or 100% juice are providing you with daily vitamins, minerals, and phytonutrients to keep your body healthy.

Inside this newspaper, you will discover the many ways we use specialty crops, the nutrition of specialty crops, and you will learn how agriculture impacts your life daily.

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**Read All About It!**

For the past 18 years, California Foundation for Agriculture in the Classroom has produced What’s Growin’ On? to help students discover the many ways agriculture impacts their daily lives. This year’s edition, Props to Specialty Crops, is inspired by the variety of nutritious specialty crops produced by California’s hard-working farmers, ranchers, and agricultural employees. The articles and activities featured in What’s Growin’ On? are designed to educate students about the diversity of commodities that offer nutritional benefits—helping students understand the various choices they have while appreciating the diverse agricultural bounty produced right here in the golden state.

Each annual edition of What’s Growin’ On? is developed by educators and reviewed by leading agriculture industry experts to provide relevant and accurate information. The activities on the following pages are aligned to third through eighth grade Standards for California Public Schools including Common Core and Next Generation Science Standards.

**Extra! Extra!**

Download a teacher’s guide with classroom extensions and lesson ideas. Available at LearnAboutAg.org/wgo.

**Answers available online!**

Visit LearnAboutAg.org/wgo.

**Free Copies for California Teachers!**

Place What’s Growin’ On? in the hands of your students by ordering a free classroom set. Order online while supplies last at LearnAboutAg.org/wgo.
Many California specialty crops are rich in vitamins and nutrients, but did you know some specialty crops also provide our bodies with protein that is essential to good health? Continue reading to learn more about when and where these popular specialty crop protein sources are grown in California.

**Artichokes**
Artichokes are one of the oldest known foods and were cultivated in the Mediterranean Basin in 300 B.C. Primarily grown on the California coast from San Francisco to Monterey, artichokes contain 2 grams of protein per serving.

**Avocados**
The avocado originated in South-central Mexico between 7000 and 5000 B.C. In California, avocados are primarily grown on the coastal strip between San Luis Obispo and San Diego counties. A serving of avocado (1/3 avocado) has 1 gram of protein.

**Chickpeas**
Chickpeas appear in early recordings in France 6790 B.C. In California, they are primarily grown in the Central Valley. Chickpeas have 6 grams of protein per serving.

**Dry Beans**
Dry beans have been produced since 6000 B.C. The most common varieties originated in Africa, Asia, and the Middle East. While grown throughout California, many varieties prefer the heat of the Central Valley. Depending on the variety, dry beans can have 6 grams of protein per serving.

**Mushrooms**
Ancient Egyptians believed mushrooms were the plant of immortality, according to hieroglyphics that date back to 2600 B.C. In California, mushrooms are primarily grown on the coastal strip between San Mateo and San Diego counties. They have 2 grams of protein per serving.

**Peas**
Peas were first cultivated in the Mediterranean in the late 1690s. They were first grown in California in the early 1900s and today are primarily grown on the Central Coast. Peas have 4 grams of protein per serving.

**Pumpkin Seeds**
The oldest pumpkin seeds were found in Mexico and date back to somewhere between 7000 and 5500 B.C. In California, the majority of pumpkins are grown in San Joaquin County. Pumpkin seeds have 5 grams of protein per serving.

**Protein Measures Up**
The amount of protein your body needs depends on age, weight, and other health factors. To give you an idea, a typically active 9 to 14-year-old child needs 34 grams of protein daily. Graph the protein per serving in each commodity featured on this page.

**Activity**
Use the template below to create a timeline depicting when each protein source was first discovered.

Standards: CA History-Social Science: HSS Analysis Skill K-5, HSS Analysis Skill 6-8

Standards: CC Math: 3.MD.B.3

Standards: CC ELA: W.3-8.2, W.3-8.7
Tea is a beverage prepared by pouring hot water over dried leaves from camellia sinensis, also known as tea plant. The plant's leaves can be processed in different ways to produce the three major types of tea: black, green, and oolong. Hot beverages can also be made from herbs such as peppermint, rooibos, and chamomile. These beverages are sometimes called "tea" although they are actually herbal infusions that do not contain leaves from the tea plant.

### Herbs in a Cup

Did you know? Tea is the world's most widely consumed beverage, after water.

### Herbs Around the House

Herbs are useful in insect repellents, air fresheners, soaps, and cleansers. Even your family pet may benefit from herbs.

**Insect repellent:** Insect repellants are substances that are applied to clothing or skin to keep insects away and prevent bites. There are numerous herbs that act as natural insect repellents, including citronella and lemon balm.

**Air freshener:** Aromatic herbs can be used to make a room smell fresh and clean. Dried herbs can be placed in decorative bowls (potpourri) or mesh bags (a sachet).

**Soap:** Soaps made with chamomile help soothe skin irritations, like rashes and sunburn. Lavender is added to soap to promote relaxation and a good mood.

**Pets:** Many people know that cats love catnip, but did you know dogs love lemongrass? Lemongrass aids in digestion, while herbs like chamomile and lemon balm have a calming effect on pets. Of course, always ask your parent or veterinarian before feeding anything to your pet.

### Herbs in Cooking

For thousands of years, tribal cultures used wild and cultivated herbs for food purposes. Historians believe hunters and gatherers wrapped meat in the leaves of bushes, accidentally discovering that this process enhanced the taste of meat. Today, herbs are often used in traditional dishes around the world.

**Rosemary** is a culinary herb that is rich in vitamins A, B, and C, as well as minerals such as potassium and iron. It is pungent, and often used for flavoring meats. Ask an adult to add rosemary to your next chicken dinner. You can even soak rosemary stalks in water and use them to skewer meat for the barbeque, which adds extra flavor.

**Thyme** dates back to medieval times when it was commonly grown in pots and gardens. Thyme is an herb used in traditional Italian, African, and French cuisines. Add a bundle of fresh or dried thyme to soups and stews.

**Chives** are a small grass-like herb first cultivated by Europeans during the Middle Ages. It is a member of the onion family, but unlike the onion, the leaves are harvested instead of the bulb. Chives add just a hint of onion to your cooking, and many people enjoy topping potatoes with chives.

### Pricey Plants

Saffron, an herb derived from the crimson dried stigma and styles (called "threads") of a crocus flower, is one of the most expensive herbs in the world. The yellow powder is often used for flavoring and adding vivid color to a variety of dishes.

Activity

The price per pound begins at $1,500 and only goes up. If there are 300 threads in one gram of saffron, what is the price per thread?

### Make Your Own Herbal Infusion

Make your own herbal infusion. Tea is typically brewed at a ratio of 3 grams dried herbs to 300 milliliters water. Research and choose three different herbs to create a unique herbal blend. Use a digital food scale to carefully measure the mass of each herb as you add it. Record the mass of each herb on a separate piece of paper. Next, convert the mass to percentage (mass in g / total g x 100 = %) and degrees (% x 100 / 360 = degrees). Use a protractor to create a circle graph, labeling each section appropriately.

- **Activity:** Research herbs that are used to repel insects and design an experiment to compare natural repellents and synthetic repellents. Plan and conduct an investigation which generates data, and share your findings with the class.

- **Standards:** CC Math 4.MD.A.1
Plants have both scientific and common names. The scientific name is Latin and consists of two parts: the first part indicates the genus and the second part indicates the species. Common names are more like nicknames and can be one word or more. Some plants have multiple common names.

Draw a line to match the scientific name to the common name.

**Borago officinalis**  
Lavender

**Viola x wittrockiana**  
Borage

**Viola tricolor**  
Daylily

**Rosa spp.**  
Hibiscus

**Lavandula angustifolia**  
Pansy

**Hemerocallis fulva**  
Pansy

**Hibiscus rosa-sinensis**  
Squash

**Cucurbita spp.**  
Rose

**Lavender**

**Borage**

**Daylily**

**Hibiscus**

**Pansy**

**Squash**

**Rose**

**A Rose by Any Other Name**

Plants have both scientific and common names. The scientific name is Latin and consists of two parts: the first part indicates the genus and the second part indicates the species. Common names are more like nicknames and can be one word or more. Some plants have multiple common names.

**Draw a line to match the scientific name to the common name.**

Hint: Often a variation of the common name can be found within the scientific name. Use the QR code to check your answers.

**Common Name**  
Lavender  
Borage  
Daylily  
Hibiscus  
Pansy  
Squash  
Rose

**Scientific Name**  
*Borago officinalis*  
*Viola x wittrockiana*  
*Viola tricolor*  
*Rosa spp.*  
*Lavandula angustifolia*  
*Hemerocallis fulva*  
*Hibiscus rosa-sinensis*  
*Cucurbita spp.*

**Safety Tips**

If a flower is not specifically marked “edible,” identify the plant and use its scientific name to determine if it is. Remember, only consume the petals of edible flowers.

**Did you Know?**

California is the largest producer of flowers and foliage, accounting for almost 80 percent of production in the United States.

**Freezin’ Flowers**

Add some pizzazz to your drink with these vibrant ice cubes.

1. Select two or three edible flowers from your garden or purchase a packet of edible flowers from your local supermarket.
2. Rinse the flowers and remove pistils and stamens.
3. Place a few flowers in each cell of the ice cube tray. Pour water into each cell.
4. Freeze until completely solid.
5. Enjoy edible flower ice cubes in your favorite beverage.

**Complete Flower Parts**

- **Petals**
- **Sepal**
- **Stigma**
- **Style**
- **Ovary**
- **Stamen**
- **Filament**

**Directions:** Using a dictionary, find the definitions of the terms above and write them in the space provided. Once complete, use the definitions to properly identify the plant part below. Write them in the space provided above.

**Standards:** NGSS: 3-5-LS1-1; CC ELA: R.I.3-6.4, RST.6-8.4

**Standards:** CA Visual Arts: 3.VA:Cr2.3, 7.VA:Cr2.3

**Anatomical Art**

After completing the flower identification activity, use a medium to create your own creative complete flower that contains all flower parts listed in the identification activity.

**Standards:** CA Visual Arts: 3.VA:Cr2.3, 7.VA:Cr2.3
Cruciferous (krew-sih ‘fer-uh)s) vegetables originated from a plant family known as Brassica ('bra-si-k'). The Brassica family is native to Europe and parts of Asia and can be identified by looking at the flowers to see if they have four equal-sized petals in the shape of a cross. Six common cruciferous vegetables you may find in the grocery stores or your garden are Brussels sprouts, Broccoli, Cabbage, Cauliflower, Kale, and Kohlrabi. Learn more about the part of the Brassica Oleracea that each *cultivar* originated from below.

**Fresh or Frozen?**

Cruciferous vegetables are a rich source of carotenoids, dietary fiber, folate, and vitamin C, E, and K. People purchase vegetables in a variety of ways ranging from fresh, canned, or frozen. Use the USDA’s FoodData Central database (fdc.nal.usda.gov) to research the nutritional profiles of raw Brussels sprouts and frozen, unprepared Brussels sprouts.

**Write a paragraph summarizing the similarities, differences, and health benefits of consuming cruciferous vegetables.**

Standards: CA Health Education: Grade 4: 3.2.N, Grade 5: 3.2.N, CC ELA: W.3-5.2

**Cauliflower Pizza Crust**

**Ingredients:**
- 3 cups uncooked cauliflower rice
- 2 eggs
- 3 tablespoons flour
- 1 teaspoon baking powder
- 1 teaspoon garlic powder
- 1 teaspoon salt

Preheat oven to 425°F and line baking sheet with parchment paper. Cook cauliflower rice until tender. Once cooked, let cool and place in clean kitchen towel and squeeze to remove all water. Mix all ingredients and mold mixture into a pizza crust. Bake for 12 – 15 minutes or until edges are golden brown. Remove from oven. Add desired toppings, such as olives and herbs; bake again until toppings are slightly browned.

Source: tasty-yummies.com

**A Plot Divided**

There are many ways to organize a garden plot. In this carefully divided plot, all six examples of cruciferous vegetables are being grown. Use the clues below to find the perimeter and area of each region in the plot. Round to the nearest hundredth.

1. The region growing broccoli, cauliflower, and Brussels sprouts is equal to the region growing kale, cabbage, and kohlrabi.
2. The region growing broccoli takes up 2/3 of the region growing broccoli, cauliflower, and Brussels sprouts.
3. The region growing cauliflower is 1/4 of the total width of the plot.


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Oregon State University (oregonstate.edu)
National Cancer Institute (cancer.gov)
U.S. National Library of Medicine (nlm.nih.gov)
Lettuce, a leafy vegetable we use for salad, in sandwiches, and other dishes, is known to scientists by its scientific name, *Lactuca Sativa*. There are four common types of lettuce: leaf (also called loose-leaf), romaine, crisphead, and butterhead. The nutritional value of lettuce varies with the variety. Its most significant nutrients are vitamin A and potassium. The vitamin A comes from beta carotene, whose yellow-orange is hidden by green *chlorophyll* pigments. The darker green, the more beta carotene present. Write a paragraph highlighting the nutritional value and health benefits of different lettuce varieties using online or printed resources, Standards: CC ELA: W.3-8.2, W.3-

**Get Growin’**
Plant the seeds from different lettuce varieties to grow a salad bowl garden on students’ desktops. Under ideal conditions, lettuce seeds will germinate in eight to 10 days. After seeds germinate, remove seedling to plant in a container or in the ground. Measure and graph the growth rate of each seed. Use QR code for detailed instructions. Standards: NGSS: 3-LS1-1,4-LS1-1, 5-LS1-1 CC; Math: 3-4, MD.4, 6.SP.4, 7.RP.2, 7.G.1

**Tech Check**
Check out the link to see NASA Crew Members sample leafy greens on the space station and their experiments!

**Lettuce Experiment**
Create a Rainbow Phloem & Xylem Lab
Xylem and phloem are two tissues found in plants which transport substances that plants need to live. Xylem cells are responsible for transporting water and dissolved nutrients from the roots up the stem to the leaves. Phloem cells are responsible for transporting a sugary sap that is made in the leaves during *photosynthesis* to the rest of the plant. Conduct a class experiment to see how the xylem and phloem function in different varieties of lettuce. Start by collecting one variety of lettuce. Place one leaf in each cup of water colored with food dye. Carry out two investigations, change out the variety of lettuce (the variable) each time. Compare observations from the first and second investigations and discuss with the class the differences you found.

Standards: NGSS: MS-LS1-1, MS-LS-6

<table>
<thead>
<tr>
<th>Lettuce Variety: ___________</th>
<th>Lettuce Variety: ___________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation</td>
<td>Observation</td>
</tr>
<tr>
<td>Day 1:</td>
<td>Day 1:</td>
</tr>
<tr>
<td>Day 3:</td>
<td>Day 3:</td>
</tr>
<tr>
<td>Day 5:</td>
<td>Day 5:</td>
</tr>
</tbody>
</table>

**Did you Know?**
Americans eat 25.8 pounds per person of lettuce each year.
The Ins and Outs of Specialty Crop Gardens

Today’s gardens can be grown nearly anywhere. Apartments, mobile homes, houses, patios, balconies, and yards are all environments that can nurture successful gardens. Produce can be grown in tin cans, terra cotta pots, raised beds, wheelbarrows, and even water baloons, and yards are all environments that can nurture successful gardens. Some communities provide areas for public gardens in which people can cultivate their own small plots. Sometimes the fruits and vegetables grown in school gardens are used for school lunches, offered to students’ families, and donated to food pantries.

Seed-sational Pots

Make your own seed pot that is the perfect size and shape for germinating (or starting) seeds. Place a full can of unopened tomato paste at the end of a 4-inch strip of newspaper. Roll the can along the strip of newspaper, folding the bottom but leaving the top edge “open.” Remove the newspaper from the can and fold the top edge over to seal the pot. Yum!

Nutrition Match

Salsa is delicious to eat, but did you know you can grow your own ingredients? Grow these herbs to match each nutrient found in the ingredient growing in the salsa garden.

1. These fruits contain lycopene, an antioxidant pigment that may decrease the risk of certain cancers and heart disease.
2. This open root crop is a good source of vitamin C and dietary fiber.
3. This pungent bulb is a good source of vitamin B6.
4. This leafy plant provides the body with thiamin and zinc. Thiamin plays a critical role in the growth, development, and function of cells.
5. These colorful fruits contain large amounts of minerals and vitamins, especially vitamin C.

Standards: CA Health Education: Grade 4: 1.1.N

Standards: CA Health Education: Grade 6: 1.3.N

Standards: CA Health Education: Grades 1, 2, 3, Grade 1-3, Grade 3-5, 6-8, 9-12

Connect With Us

Do you have a home garden? Do you have a school garden? What are you growing? How are you growing it? Snap a photo and have an adult post it to social media. #Props2SpecialtyCrops

One Bite Salsa

Enjoy the fruits (or veggies) of your labor straight from the garden. After washing your hands and produce, place a small piece of pepper on a green onion leaf. Place a cherry tomato on top and roll it up. Enjoy all the flavors of a traditional salsa in just one bite.

Standards: CC ELA: RL.3.1, RL.4-8.2

Standards: CA Health Education: Grade 5: 1.2.N, 1.3.N

Standards: CA Health Education: Grade 6: 1.3.N

Standards: CA Health Education: Grades 1, 2, 3, Grade 1-3, Grade 3-5, 6-8, 9-12


Standards: SL.3-5.1.D

Gardening for Good

During World War I and II, the ability to produce fruits and vegetables was made difficult because the labor force was putting their energy into the war effort rather than food production. Citizens, including school children, created “Victory Gardens” to produce food in any plots of land available. Discuss the ways gardens are used today to serve communities.

Keys to a Successful Garden

1. Plant seasonally California features numerous microclimates—a trait that varies in temperature, humidity, and rainfall based on geographic features. There are optimal planting times for each of California’s regions. Check out Learn About Ag’s Crop Circles to find out what specialty crops you can plant in your garden today. https://www.learnaboutag.org/resources/gardens/crop.pdf
2. Irrigate regularly Before you plant, find your closest source of water. Consider installing drip irrigation, where water is delivered to the base of each plant through small tubes. This method uses less water than overhead sprinklers and less evaporation occurs. Practice being water wise by draining drip systems on the foundation illustration.
3. Feed thoughtfully Consider applying compost or synthetic fertilizers before planting and midway through the season. If using a synthetic fertilizer, follow application instructions on the label. Research the three major plant nutrients: nitrogen, phosphorous, and potassium. Most plants need to grow using Ag in the Classroom’s Fact Sheets at LearnAboutAg.org/resources/fact.

TomatoeDeYum

TOMATOES ARE A-CENTRAL INGREDIENT TO SAUCES, KETCHUP, AND SPAGHETTI SAUCE—SO HOW DO PRODUCERS FOCUS ENOUGH TOMATOES TO KEEP OUR ITALIAN/CHICHE? THIS VIDEO FROM THE TOMATO WILDFLOWER COORDINATES SHARES EXAMPLES HOW TITOMATOES ARE GROWN IN THE FIELD, HARVESTED MECHANICALLY, AND TRANSFORMED INTO THE CANNED TOMATO PRODUCTS WE ENJOY.
Citron Tree

Growing Region: Coastal and desert regions of California.

Common Relatives:
- Eureka and Lisbon lemons are bitter-flavored lemons that can be used to flavor both sweet and savory dishes.
- Pink variegated lemons are known for their pink flesh and acidic flavor.
- Persian limes are traditional limes known for their tart flavor.

Nutritional Value: Along with supplying substantial amounts of vitamin C, the health benefits of these fruits also rest in their fiber and phytochemicals.

There are over 3,000 growers farming 320,000 acres of citrus in California. Citrus trees are propagated through a procedure known as grafting, where two different plant parts are physically joined and grow together as one plant. One part, the rootstock, is selected for its hardiness and the other part, the scion, is selected for its fruit quality.

There are only three original species of citrus fruits—mandarin orange, pummelo, and citron. All other citrus fruits we see today are actually products of crossbreeding these original species. What varieties of citrus have you tried listed on this page? What seed varieties did they originate from? Answer below using the information on this page.

Mandarin Tree

Growing Region: 75% of oranges are grown in the San Joaquin Valley.

Common Relatives:
- Valencia orange is commonly used to make the orange juice in your refrigerator.
- Navel orange is known for their belly button-like apex and sweet aroma.
- Blood orange is known for their crimson flesh and a flavor that is both sweet and tart.

Nutritional Value: All orange varieties are a good source of vitamin C, folate, fiber, and antioxidants.

Pummelo Tree

Growing Region: The desert regions of California.

Common Relatives:
- Pummelos look like a large grapefruit, but are less acidic.
  - Red and pink grapefruits get their color from lycopene, a natural antioxidant.
  - White grapefruits are actually yellow in color and available year round.

Nutritional Value: Pummelo varieties are an excellent source of vitamin C, and a source of many other nutrients such as fiber, folate, thiamin, vitamin A, and potassium.

Size Up Your Citrus

Collect a variety of citrus fruits to conduct an analysis of size and shape. Measure the citrus fruits both in standard and metric units. Determine the diameter, circumference, weight, and volume of each citrus fruit. Use the provided scale to illustrate and label your citrus fruit according to size.

When you take a bite of food, over 10,000 taste buds are working together to communicate with your brain whether the food is sour, salty, bitter, sweet, or earthy. If you look at your tongue, each one of those bumps are known as papillae (puh-PILL-ee). Within the papillae are two components, the taste bud and the microscopic hairs called microvilli (mye-krö-VILL-eye). The taste buds host the microvilli, acting as the sensory organ that transports information to your brain. These experiments will help you determine how your taste buds are working.

**Science Investigation: Find Out if You are a Supertaster**

Have you ever been called a picky eater? If so, you may actually be a supertaster! People who have more taste buds are called supertasters. Supertasters experience taste with far greater intensity and are particularly sensitive to bitter tastes. Perform this experiment to see if you are a supertaster.

**Steps:**

1. Working with gloved hands, trace the outline of a reinforcement label on wax paper. Use a hole punch to remove the center of the circle. Cut around the perimeter of the circle. Create one wax paper circle for each participant.

2. Have the first participant open his or her mouth. Place a drop of blue food coloring on the tip of his or her tongue.

3. Have the volunteer take a sip of water, swish it around, and then spit it out.

4. With gloved hands, place a wax paper circle on the tip of the participant’s tongue.

5. Use a flashlight or magnifying glass to count the number of papillae inside the wax paper circle. **Tip:** Do not count the really tiny bumps; just the larger ones.

6. Compare your data to the table to determine if the participant is a supertaster.

<table>
<thead>
<tr>
<th>Number of Papillae</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;15 papillae</td>
<td>Non-taster</td>
</tr>
<tr>
<td>Between 15 and 30</td>
<td>Average Taster</td>
</tr>
<tr>
<td>30&lt; papillae</td>
<td>Supertaster</td>
</tr>
</tbody>
</table>

**Cilantro Taste Test**

Scientists believe that the taste of cilantro has more to do with the taster’s genes than the flavor of the herb. This taste test will reveal a genetic disposition for categorizing cilantro as fresh or foul.

1. Obtain a single leaf of fresh cilantro. Record your observations of smell, texture, physical characteristics, and a prediction about what it will taste like.

2. Take a bite of the cilantro and record what flavors you taste.

3. Participants who describe cilantro as soapy likely have extra papillae, categorizing them as a supertaster.

**Flavor Investigation:** Do you ever wonder why you have favorite foods? There are five flavor profiles that are universally recognized, while our individual flavor sensitivity and food preferences are influenced by our culture, exposure to foods, and even genetics. Work with a partner to research two specialty crop examples for each of the flavor profiles listed on the cape. Write your answers within the provided space. Select one specialty crop to research and record geographical historical information on a separate sheet of paper.

**Q: What does a nosey pepper do?**

A: Gets jalapeño business.

**Create Your Own Superhero!**

What would you do if you were a superhero that had powers taken from the flavor profile chart, and could solve a problem? Would you be a super sweet hero, who uses mint tea to lull enemies into a deep sleep? Would you be a down to earth Umami hero who shoots onion juice from her gloves to make the bad guys cry? Choose a flavor profile and specialty crop to create an original story and share it with your peers. Don’t forget to illustrate your hero and consider entering your story in the Imagine this... Story Writing Contest. Details can be found at LearnAboutAg.org/imaginethis.

**Standards:** CC ELA: W.3-5.3.A; CA Visual Arts: 3.VA:Cr2.1

**Umami Information Center**

www.umamiinfo.com

**Brain Facts**

brainfacts.org

**National Human Genome Research Institute**

genome.gov

**Science Buddies**

sciencebuddies.org

**Kids Health**

kidshealth.org

**Science Notes**

sciencenotes.org

**Umami Information Center**

umamiinfo.com
Eating flowers at dinner? Serving stems for hors d'oeuvres? Enjoying roots for dessert? These may sound like uncommon food dishes, but if you think about it, they are not so unusual. When we eat cauliflower, we are eating the flower of the plant. When we eat asparagus, we are eating the plant's stem. When we eat turnips, beets, and onions, we are eating roots. With some plants, we eat more than one part. The root of the beet plant is what most people like to eat, but the leaves are also good to eat in salads, when the leaves are young and tender, and cooked when they get bigger. We eat the root of the onion plant but can also eat the stems, for a milder flavor. By eating a variety of plant parts, you enhance your ability to eat all the vitamins and phytochemicals that your body needs. We get different nutrients from each different type of fruit or vegetable. For a healthy lifestyle, enjoy eating a wide variety of colorful fruits and vegetables.

A Guide to Edible Plant Parts

Use these definitions for the activities below.

**Fruit:** A fruit is a soft structure, normally found around a seed.

**Leaves:** Leaves make food for the plant from carbon dioxide and water, using light for energy. This process is called **photosynthesis**.

**Flowers:** Flowers contain the reproductive parts of a plant. Colorful and fragrant flowers attract insects, which pollinate the flowers and initiate reproduction.

**Stems:** Stems support the leaves and flowers of plants. They transport water from the roots to the leaves and flowers, and carry sugar and starches made in the leaves to other parts of the plant.

**Roots:** Roots anchor the plant in the soil, absorb water and minerals, and store food.

**Top:** A fruit or vegetable whose edible part is grown above the ground.

**Middle:** A fruit or vegetable whose edible part is grown above ground and in the middle of the plant.

**Bottom:** A fruit or vegetable whose edible part is grown below the ground.

### Activity

Use print or digital sources to research each produce item. Complete the table with information you find. The first one is completed for you.

<table>
<thead>
<tr>
<th>Produce</th>
<th>Plant Part</th>
<th>Location (top, middle, or bottom)</th>
<th>Nutritional Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabbage</td>
<td>Leaf</td>
<td>Top</td>
<td>High Vitamin C, Folate, and Fiber</td>
</tr>
<tr>
<td>Pumpkins</td>
<td>Leaf</td>
<td>Top</td>
<td></td>
</tr>
<tr>
<td>Asparagus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broccoli</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brussels sprouts</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Did You Know?

*Although celery is often considered a stem, it is botanically speaking, a leaf. The crisp part we enjoy is the stalk of the leaf, otherwise known as the petiole.*

Standards: CC ELA: W.3.8, W.4-5.9; CA Health Education: Grades 7-8: 1.6.N

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It's the Pits: All About the Drupe Group

A drupe, in botany, is a fleshy fruit with thin skin that contains a central stone, also known as the endocarp or pit. Some commonly consumed drupes are peaches, plums, olives, and cherries. When eating a cherry, you consume the mesocarp (the flesh), the exocarp (the skin), and you spit out the endocarp (the pit). Walnuts, almonds, and pistachios are also examples drupes, but in these commodities, we just eat the seed, commonly known as the nut, which is found inside the endocarp.

Can you identify the California grown drupes using the crossword clues? Hint: Check your answers using this QR code.

Across
1. Oldest known tree food.
2. A single gene gives this fruit fuzzy skin.
3. More than 90 countries import this famous California nut.
4. Bing is one of the most popular varieties.
5. The seed is green.

Down
1. Oldest known tree food.
4. Bing is one of the most popular varieties.
5. Also called prunes.
6. These trees are evergreen - they do not lose their leaves in the fall.

Distributing Drupes: An agricultural export is a commodity that is sold in a different country. California’s top drupe export value is $20.56 billion. Use information from the table below to calculate the percent of total drupe exports each commodity represents.

<table>
<thead>
<tr>
<th>Drupe</th>
<th>Export $</th>
<th>Top Exp. Country</th>
<th>Find the % of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almonds</td>
<td>$4.483 Billion</td>
<td>European Union</td>
<td></td>
</tr>
<tr>
<td>Cherries</td>
<td>$160 Million</td>
<td>China</td>
<td></td>
</tr>
<tr>
<td>Dried plums (prunes)</td>
<td>$142 Million</td>
<td>European Union</td>
<td></td>
</tr>
<tr>
<td>Pistachios</td>
<td>$1.518 Billion</td>
<td>China</td>
<td></td>
</tr>
<tr>
<td>Olives</td>
<td>$40 Million</td>
<td>Canada</td>
<td></td>
</tr>
<tr>
<td>Walnuts</td>
<td>$1.370 Billion</td>
<td>European Union</td>
<td></td>
</tr>
<tr>
<td>Peach</td>
<td>$1.25 Million</td>
<td>Canada</td>
<td></td>
</tr>
<tr>
<td>Apricot</td>
<td>$19 Million</td>
<td>Canada</td>
<td></td>
</tr>
</tbody>
</table>

Perk Up Your Health with Drupes

Don’t let the name fool you. Drupes won’t actually make you droop, but they may enhance your health with their numerous nutritional benefits. Many drupes we eat offer a wide variety of vitamins and nutrients in a single serving. Circle the drupes on the page that you have tasted. Use the QR code to learn about the additional health benefits these drupes have to offer.

Activity

Using the word bank, label the parts of a drupe using the definition in the introductory paragraph.

Word Bank: exocarp, endocarp, seed, mesocarp

Standards: CC ELA: RI.3.5, L.4-8.4.B

Take it to the next level! Research the Latin meaning of each prefix which ends in “carp.” How does the meaning of each prefix accurately describe each structure?
Eating nutritious food(s) is key to fueling your body. MyPlate is a guide that helps you find a healthy eating style and build it throughout your lifetime. Everything you eat and drink matters. The right mix can help you be healthier now and in the future. Let’s build our plate!

**Fruit**
Fruits are nature’s treats—sweet and delicious. Fruits differ in nutrient content, so eat a variety. Fruits may be fresh, canned, frozen, or dried, and may be whole, cut-up, or pureed. Fruits are a great source of potassium, dietary fiber, vitamin C, and folate.

**Vegetable**
Vegetables can be raw or cooked; fresh, frozen, canned, or dried/dehydrated; and may be whole, cut-up, or mashed. Vegetables are organized into five subgroups: dark-green vegetables, starchy vegetables, red and orange vegetables, beans and peas, and other vegetables. Vegetables are a good source of dietary fiber, which helps reduce cholesterol levels and lower the risk of heart disease.

**Grain**
A grain is the seed or fruit of a cereal grass. Grains are divided into two subgroups, whole grains and refined grains. Whole grains are a good source of fiber and may help maintain a healthy weight.

**Protein**
Proteins are the building blocks for bones, muscles, cartilage, skin, and blood. Protein rich foods provide many nutrients including B vitamins, vitamin E, iron, zinc, and magnesium. Proteins are one of the three nutrients that provide energy for the body.

**Dairy**
All fluid milk products and many foods made from milk are considered part of this food group. Dairy products are a good source of calcium, potassium, vitamin D, and protein.

**Activity**
Did you know a variety of specialty crop items can be found at your local grocery store? Use this ad to determine the price of each item on sale.

- 1 lb. bag of almonds
- Head of Lettuce
- 1 lb. bag of pistachios
- Apples
- 1 lb. bag of dry beans
- Strawberries
- Carrots
- Persimmons

With only $7.00 to spend, can you purchase a bag of pistachios and a bag of almonds? How much more money do you need, or how much money do you have left over? If you purchase six carrots, three apples, and two heads of lettuce, what would be the total cost? If you have a coupon for an additional 20% off per pound of almonds, what is the total cost?


**Persimmon Poll**
Poll your classmates to determine if they have eaten persimmons prior to tasting them in class. Create a bar graph illustrating your results.

Standard: CC Math: 3.MD.B.3

**Did You Know?**
There are lots of ways to build your plate, but you can’t go wrong as long as half your plate is filled with fruits and vegetables.
Ambient Food: Food that would normally be stored in a refrigerator but has been processed to be safely stored at room temperature increasing the shelf-life.

Antioxidants: Vitamins and other nutrients that help protect cells in the body.

Aromatic: A substance or plant emitting a pleasant and distinctive smell.

Cereal Grass: A grass whose starchy grains are used as food such as wheat, rice, rye, and oats.

Chlorophyll: A substance in green plants that converts light energy into chemical energy using carbon dioxide and water.

Complete Flower: A flower having all four floral parts: sepal, petals, stamens, and carpels.

Crossbreeding: Crossing two varieties within the same species.

Culinary: Of or for cooking.

Cultivar: Propagated through vegetative practices instead of by seed.

Drip Emitters: A device that releases water that is connected to the main irrigation line.

Edible: Something that is suitable or safe to eat/consume.

Fruit Leather: A sheet of dried pured fruit.

Generate: To bring into existence.

Genetics: A branch of biology that deals with the heredity and variation of organisms.

Herbal infusion: The process of steeping (soaking) herbs in water until the water absorbs the oils and flavors.

Hydroponically: Growing crops in nutrient solutions without soil.

Infusion: The steeping of a substance in water to obtain its soluble principles.

Oolong: Partially oxidized tea.

Organism: An individual animal, plant, or single-celled life form.

Originated: Produced or created.

Photosynthesis: The process plants go through to convert carbon dioxide and water into oxygen and glucose. It requires the energy of the sun.

Potpourri: Mixed flower petals and spices used to perfume a room.

Propagate: A natural process of reproduction in plants and animals.

Pungent: Having a strong taste or smell.

Refined Grains: A product that has been processed, removing the bran and germ through a milling process.

Rootstock: Root portion of a tree that another tree is grafted to.

Sachet: A small perfumed bag used to scent clothes.

Seasonality: Of, relating to, or restricted to a particular season of availability.

Staple Food: Food regularly consumed and, in such quantities, that it constitutes a dominant portion of a diet.

Subspecies: A small group of plants or animals that are similar and can produce young.

Synthetic Fertilizer: A man-made substance that is added to soil to help the growth of plants.

Toxic: Relating to or caused by poison.

Umami: The intensely savory taste imparted by glutamates that occur naturally in many foods such as meat, fish, and vegetables.

Varieties: A ranking below subspecies that diverge from the parent species and subspecies.

Whole Grains: The entire grain kernel including the bran, germ, and endosperm.

Activity

Choose ten words in the glossary and create an illustrated dictionary. Identify whether each word is a noun, adjective, or verb. Standard: CC ELA: L.3-8.6

Resources

Almond Board of California
almonds.com

American Heart Association
heart.org

California Artichoke Advisory Board
artichokes.org

California Avocado Commission
californiaavocado.com

California Bountiful
californiabountiful.com

California Citrus Mutual
cacitrusmutual.com

California Cut Flower Commission
ccfc.org

California Department of Food and Agriculture
cdfa.ca.gov

California Dry Bean Advisory Board
calbeans.gov

California Farm Bureau Federation
cfbf.org

California Foundation for Agriculture in the Classroom
LearnAboutAg.org

California Walnut Board
walnuts.org

Gills Onions
gillonions.com

Harvard T.H. Chan School of Public Health
hsph.harvard.edu

Have a Plant
fruitsandveggies.org

National Aeronautics and Space Administration
nasa.gov

The Mushroom Council
mushroomcouncil.com

The Tomato Wellness Council
tomatowellness.com

University of California Agriculture and Natural Resources
ucanr.edu

USDA – ChooseMyPlate
choosemyplate.gov

United States Department of Agriculture
usda.gov

Teachers: To request a free copy of What’s Growin’ On? Extra! Extra! Extensions to enhance the use of this newspaper, visit LearnAboutAg.org/wgo or call (800) 700-AITC (2482).
You CAN FREEZE FRESH Food

There is a wide variety of food choices to select from when you walk into the grocery store. When you choose to purchase fruits and vegetables that are fresh, frozen, or canned, the important message is that you are consuming nutrient dense produce that provides your body what it needs, no matter the form it is purchased in. Consuming fruits and vegetables are key to improving and maintaining a healthy lifestyle. It is recommended that we eat between one and three cups of vegetables and between one and two cups of fruit every day.

Did You Know?

Frozen food generates 47% less food waste when compared to chilled and ambient food consumed in the home?

All fresh, frozen, and canned forms of produce provide needed nutrients that make up a healthy diet.

Did You Know? 86.8% of food waste from food manufacturing facilities is repurposed for animal feed?

Processing tomatoes are harvested and canned within four to six hours of harvest.

About California Foundation for Agriculture in the Classroom

California Foundation for Agriculture in the Classroom is a 501(c)(3) nonprofit organization that provides educators with free standards-based resources about California agriculture. The Foundation’s vision is an appreciation of agriculture by all.

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Acknowledgements

Jim and Neta Hicks

Jim Hicks Family Foundation

Sustainable Futures Fund

Acknowledgements

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Can Food Alliance (mealtime.org)
American Frozen Food Institute (affi.org)