

Props to Nutritious Specialty Crops!

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.

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.

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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.

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*.

Activity proteins Through the Seaso Analyze the graphic below. Select two protein sources and research more about their season availability and nutritional value. On a separate sheet of paper, write a paragraph describing their similarities and differences. Many California specialty crops are rich in vitamins Standards: CC ELA: W.3-8.2. W.3-8.7 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. Winter Fall Artichokes are one of the oldest known foods and were cultivated in the Artichokes Rushrooms Mediterranean Basin in 300 B.C. Primarily grown on the California coast from San Francisco to Monterey, artichokes contain 2 grams of protein Artichokes per serving. Qumpkin The avocado originated in South-central Mexico between 7000 and 5000 Avocados B.C. In California, avocados are primarily grown on the coastal strip oved Beans between San Luis Obispo and San Diego counties. A serving of avocado (1/3 avocado) has 1 gram of protein. 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 have been produced since 6000 B.C. The most common Dry Beans varieties originated in Africa, Asia, and the Middle East. While grown throughout California, many varieties prefer the heat of the Avocad Articholes Central Valley. Depending on the variety, dry beans can have 6 grams of protein per serving. Mushroom Chickness Mushrooms Mushrooms Ancient Egyptians believed mushrooms were the plant of immortality, according to hieroglyphics that date back to 2600 B.C. In California, Peas Spring mushrooms are primarily grown on the coastal strip between San Mateo Summer and San Diego counties. They have 2 grams of protein per serving. Peas were first cultivated in the Mediterranean in the late 1690s. Reas They were first grown in California in the early 1900s and today are • • • Available in Stores **Growing Season** primarily grown on the Central Coast. Peas have 4 grams of protein per serving. 🌠 Protein Measures Up The amount of protein your body needs depends on age, weight, The oldest pumpkin seeds were found in Mexico and and other health factors. To give you an idea, a typically active date back to somewhere between 7000 and 5500 B.C. In 9 to 14-year-old child needs 34 grams of protein daily. Graph the **Artichokes contain** California, the majority of pumpkins are grown in San protein per serving in each commodity featured on this page. Avocados Joaquin County. Pumpkin seeds have 5 grams of vitamin C, folate, Standard: CC Math: 3.MD.B.3 contain and magnesium. protein per serving. potassium, vitamin K, GINTEN and folate. Chickpeas contain vitamin C, folate, Use the template below to create a timeline depicting when Peas contain vitamin Dry beans contain C and A, folate, and each protein source was first discovered. and magnesium. iron, zinc, and folate. dietary fiber. Standards: CA History-Social Science: HSS Analysis Skill K-5, HSS Analysis Skill 6-8 **Mushrooms contain** Pumpkin Seeds contain potassium, selenium, vitamin D and Bvitamins. magnesium, zincand dietary fiber.

California leads the nation in herb production - plants with leaves, seeds, or flowers used for flavoring, food, medicine or perfume. Here are just a few popular ways to use herbs.

Fitto Hark

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

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. Standards: CC Math: 3.MD.A.2. 4.MD.C.6. 6.RP.A.3.C

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.

Learn more about growing your own herbs at home by scanning this QR code.

Pricey Plants

ACTIVITY

Standard: CC Math 4.MD.A.1

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.

\$1,500 and only goes up. If there are 300 threads in

one gram of saffron, what is the price per thread?

The price per pound begins at

Herbs in a Cup

Tea is a beverage prepared by pouring hot water over dried leaves from camellia senensis, 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 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.

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 Standard: NGSS: 3-5-ETS1-3.



Eating Your Way Through the Garden

When planning a garden, there are many **edible** choices to select from such as vegetables, fruits, flowers, and herbs. Planting edible flowers can enhance your garden and your health by providing you with a source of vitamins and minerals. Edible flowers are most often used in salads and desserts but can be used in entrees, beverages and sauces to **enhance** flavor and appearance! Remember, some flowers are safe to eat while others should not be eaten because they can be **toxic**. Some varieties of edible flowers that you can add to your garden are: Borage, Rose, Lavender, Daylily, Hibiscus, Pansy, and Squash.

rden Freezin' Flowers Add some pizzazz to your drink with these vibrant ice cubes.

GUING

- **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.

🚺 Did you Know?

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

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.

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.

Common Name

Lavender Borage Daylily Hibiscus Pansy Squash Rose

e Scientific Name

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



Complete Flower Parts

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

CUIVILY -

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

Colorado State University Extension (extension.colostate.edu) Journal of the Academy of Nutrition and Dietetics (jandonline.org) Kids Gardening (kidsgardening.org) Texas A&M AgriLife Extension (agrilifeextension.tawu.edu) Burpee (burpee.com)

cabbage, Cauliflower, and the #CruciferousCrew Cruciferous (krew-sih 'fer-uhs) 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.

Freshor 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

Did You Know?

Cauliflower comes in different colors. Although they all taste the same, the darker colors (like purple) are richer in antioxidants.

Make your own

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



SixCommon

at the grocery store.

Gruciferous Vegetables

California produces all 6 of the wild mustard subspecies. Add your own drawings to illustrate

what each vegetable looks like when you buy it

sprout

Activity 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 region growing broccoli, the region growing kale, cabbage, and kohlrabi.

2. The region growing broccoli takes up 2/3 of the cauliflower, and Brussels sprouts.

3. The region growing cauliflower is 1/4 of the total width of the plot.

Caulifilo

Standards: CC Math: 3.MD.D.8, 4.MD.A.3, 4.NF.B.4.C



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 looseleaf), romaine, crisphead, and butterhead. The nutritional value of lettuce varies with the variety. Its most significant nutrients are vitamin A and

ng Heads with Leafy Greens

Endive Watercress

inach





"Lettuce is nutritious, lettuce is cool, if you don't like lettuce, you're really a fool." Have a class challenge of writing your own Specialty Crop Rap and perform it for the class!

Did you Know? Americans eat 25.8 pounds per person of lettuce each year.

Radicchia

Tech Check

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

Mizuna

Make your own

Lettuce Wraps

Think beyond the salad bowl—lettuce can be used for a number of dishes, including lettuce wraps. Lettuce wraps are similar to

tacos, but with lettuce instead of a tortilla. Make lettuce wraps at home or school using one of the featured lettuce varieties and at least three additional crops within this edition of *What's Growin' On?* Here are some combinations to get your wrap started:

Carrot, mushroom, onion, and edible flowers.

- Pumpkin, walnuts, and orange
 - My wrap:



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'

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

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

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

Lettuce Variety: Observation	Lettuce Variety: Observation
Day 1:	Day 1:
Day 3:	Day 3:
Day 5:	Day 5:

The Ins and Outs of Specialty Grop 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, wheel barrows, and even water (hydroponically). Some communities provide areas for public gardens in which people can cultivate their own small plot. Sometimes the fruits and vegetables grown in school gardens are used for school lunches, offered to students' families, and donated to food pantries.

Garden in a Glove

Under ideal conditions, some flower seeds like alyssum, marigolds, and cosmos will germinate in five to seven days. Push seeds wrapped in moist cotton balls into the fingertips of a latex glove, tape the glove to a window, and lightly spray with water daily. After seeds germinate, cut fingers off the glove, remove cotton balls, and plant seedlings in a container or in the ground. Visit LearnAboutAg.org/resouces/bites for detailed instructions.

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. Violà!



Garden "Plot"

Read how gardens play a role in great storytelling. Pick up a book like Esperanza Rising, The War That Saved *My Life, The Thing About Luck, or WeedFlower*. Discuss the central role gardening plays in each story. Standards: CC ELA: RL.3.1, RL.4-8.2

You Are What You "Ate"

As you enter the garden, you may find yourself learning a whole new lingo. Find the meaning of words used in the garden that end with the suffix "-ate" (for example: cultivate, germinate, irrigate, propagate). Use the word in a sentence and draw a related illustration. Standards: CC ELA: L.3.1.D, L.3-8.4.D



Tomatoes to You

Tomatoes are a central ingredient to salsa, ketchup, and spaghetti sauce—so how do farmers produce enough tomatoes to keep our pantries stocked? This video from The Tomato Wellness Council shows consumers how tomatoes are grown in the fields, harvested mechanically, and transformed into the canned tomato products we enjoy.

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Connect With Us

Do vou have a home garden? Do vou 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**

Nutrition Match

1. These fruits contain lycopene, an antioxidant pigment that may decrease the risk of certain cancers and heart disease.

2. This spicy root crop is a good source of vitamin C and dietary fiber.

3. This pungent bulb is a good source of vitamin B6.

Complete the bar graph to depict the vitamin C content in green peppers, tomatoes, onions, and red peppers. Use print or digital sources to find the nutrition facts label for each of these crops. Use the data to complete the graph.

Standards: CA Health Education: Grade 5: 1.2.N, 3.2.N, Grade 7: 1.6.N; CC Math: 3.MD.B.3

One Bite Salsa

Enjoy the fruits (or veggies) of your labor straight from the garden. After washing your hands and produce, place a piece of cilantro and 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.

Salsa is delicious to eat, but did you know some ingredients in salsa benefit your health? Draw a line to match each nutritional fact below to the ingredient growing in the salsa garden.

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, Grade 7: 1.2.N



Up, Up, and Avery

If you don't have enough room for a traditional garden, consider planting your favorite herbs, flowers, or vegetable crops upright in a vertical garden. Hang painted tin cans along a pallet or fence to make an affordable and artistic planter. Attaching rain gutters to an outdoor wall is another way to raise herbs and lettuce that take up very little soil space.

Gardening for Good



During World War I and II. he ability to produce fruits and vegetables was made difficult because the labor force was putting their energy into the war effort rather 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. Standards: CC ELA: L.3-5.1.D



Keys to a Successful Garden...

1. Plant seasonally California features numerous microclimates—areas that vary 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 drawing drip emitters on the featured 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, or macronutrients, that plants need to grow using Ag in the Classroom's Fact Sheets at LearnAboutAg.org/resources/fact.

Citrus - Squeeze the Day!

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, pumelo, 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.

The acidity in lemons, along with metal conductors, create enough electricity to illuminate a small lightbulb.

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.



Red and pink grapefruits get their color from lycopene, a natural antioxidant.



Come Clean with Citrus Citrus concentrates are easy-to-make and effective cleaning solutions. Learn how to make an all-natural disinfectant, anti-adhesive, and air freshener. Visit sunkist.com/ healthy-living to learn more.

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. Standards: CC Math 3.MD.A.2, 5.MD.C.3, 8.G.C.9 is closest to your school? How far away is it? Learn more about Asian Citrus Psyllid from Ag in the Classroom's Fact and Activity Sheets LearnAboutAg.org/resources/fact. Contact CDFA to report suspicious insects or disease symptoms in your citrus trees. Standard: CA History Social Science 3.1

Particularly Pesky Pests Invasive species are **organisms** that are moved by nature, people, or

animals into an ecosystem where they have not been previously found.

Currently, California citrus is under

the threat of attack by a tiny bug

with a big impact. The bug is called

the pest is only the size of a sesame

seed, it slowly kills the tree and stops

sightings and plot them on a map (using

digital or print sources). Which sighting

it from producing fruit. Research the latest Asian Citrus Psyllid

the Asian Citrus Psyllid and it causes Huanglongbing disease. Although

Orange peels sprinkled over garden soil can act as a natural slug repellent.

.....

.....

.....

medium

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10

Harvest of the Month (harvestofthemonth.cdph.ca.gov) National Geographic (nationalgeographic.com) Sunkist (sunkist.com)

very small

small

University of California Riverside Citrus Variety (citrusvariety.ucr.edu)

large

very large

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-kro-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

otts Make Your Food

Have you ever been called a picky eater? If so,		Number of Papillae	Description		Citrus
you may actually be a supertaster! People who have		<15 papillae	Non-taster	12	So
experience taste with far greater intensity and ar	e	Between 15 and 30	Average Taste	r	
particularly sensitive to bitter tastes. Perform this experiment to see if you are a supertaster.		30< papillae	Supertaster	Capers	
CTEDC	464	Standard: NGSS	: MS-LS1-1		
SIErSi					Salty
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.	Hav ben his lace a d bloring is or he	te the first participat or her mouth. Trop of blue food on the tip of r tongue.	nt	Kale	Bitter
Have the volunteer take a sip of water, swish it around, and then spit it out.	Mushr	Da Da Dooms	tes		Swee
tongue. 5. Use a flashlight or magnifying glass to cour number of papillae inside the wax paper circle. not count the really tiny bumps; just the larger of	nt the Tip: Do ones.	o 6. Comp. determ	are your data to ine if the partici	the table to pant is a supertaster.	Umami



Brain Facts (brainfacts.org)

Science Buddies (sciencebuddies.org)

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 record what flavors you taste. of smell, texture, physical characteristics, and a prediction about what it will taste like.

2. Take a bite of the cilantro and

3. Participants who describe cilantro as soapy likely have extra papillae, categorizing them as a supertaster. Standard: NGSS: MS-LS1-1

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

Sour

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

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.

Standards: ELA.W.3-5.3.A, CA History-Social Science 3.5.1

National Human Genome Research Institute (genome.gov) Science Notes (sciencenotes.org)

Kids Health (kidshealth.org) Umami Information Center (umamiinfo.com)

Tops, Middles, and Bottoms

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.

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.

Dig a Little Deeper

Research a specialty crop plant, including production information, historical facts, and commodity value. Share your findings with your class, using appropriate facts and relevant details. Speak clearly at an understandable pace. Standard: CC ELA: SL.3-5.4 Leaves: Leaves make food for the plant from carbon dioxide and water, using light for energy. This process is called **photosynthesis**.



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

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

Produce	Plant Part	Location (top, middle, or bottom)	Nutritional Benefits
Cabbage	Leaf	Тор	High Vitamin C, Folate, and Fiber
Pumpkins			N X
Asparagus			
Broccoli			Although ce
Carrot			stem, it is bo The crisp pa
Brussels sprouts		E E NI AV VIKSVAS VA	the leaf, or
andards: CC ELA: W.3.8, W.	4-5.9; CA Health Educa	ition: Grades 7-8: 1.6.N	

From Scraps to Snacks

Did you know you can grow food from kitchen scraps? Some vegetables and fruits are able to **generate** a new plant from just a small piece of the stem, leaf, or other plant tissue. Gardeners sometimes use this method as a low-cost way to **propagate** plants. Plants that are easy to grow from scraps include: celery, romaine lettuce, carrots, onions, potatoes, ginger, basil, and garlic. Conduct a classroom experiment to test which method, water or soil, is most effective in propagating lettuce plants. Document your failures and successes in a science journal and compare the process and results

with your classmates. Next, change a variable such as the type of food scrap or growing environment and conduct the experiment again to see if results vary. Standards: NGSS: 4-L51-1, 5-L51-1, MS-L51-4

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

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

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.

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Have A Plant (fruitsandveggies.org) American Heart Association (heart.org)

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.



 A single gene gives this fruit fuzzy skin.
More than 90 countries import this famous California nut.
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.

2

Drupe	Export \$	Top Exp. Country	Find the % of total
Almonds	\$4.483 Billion	European Union	
Cherries	\$160 Million	China	
Dried plums (prunes)	\$142 Million	European Union	
Pistachios	\$1.518 Billion	China	
Olives	\$40 Million	Canada	
🍂 🖓 Walnuts	\$1.370 Billion	European Union	
Peach	\$1.25 Million	Canada	
O Apricot	\$19 Million	Canada	

Standard: CC Math: 6.RP.A.3C

Did you Know?

During World War I, peach pits were gathered, ground, and used as filters in gas masks.

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.

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

of a drupe endocarp, seed, mesocarp

using the definition in the introductory paragraph. 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?

Have A Plant (fruitsandveggies.org) USDA-ChooseMyPlate (choosemyplate.gov)

Did you know? Pomegranate trees can live for over 200 years.

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.

Make your own

Source: weelicious.com

Persimmon Fruit Leather

This kid-friendly recipe can be modified to other specialty crops, such as apples or pears. **Ingredients:** Three medium persimmons

Process: 1. Wash persimmons, remove stems, cut into pieces, and puree in blender until smooth. 2. Pour mixture on lined pan and spread evenly. 3. Bake for 2 1/2 hours at 200° degrees Fahrenheit or until leather is dry and firm to the touch. 4. Let cool at room temperature and cut into strips.

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.

Dairy

All fluid milk products and

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!

Farmer's Market

almond: \$5.75

\$0.25 each

1 lb. bag of

\$3.50

dry beans

Veekly Mailer

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

0

why more than 50 varieties of beans are grown in California. 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.

A wide range of Head of Lettuce climates is one reason \$1.50 each Apples \$0.25 each

OUR State, Our Specialty Plate

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 1 lb. bag of pistachios - 1 lb. bag of dry beans Carrots

Strawberries

\$3.00 per basket

All items

Persimmons \$0.50 each

> **Head of Lettuce** Apples

Strawberries

Persimmons

ACCENTICA

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? Standards: CC Math: 4.MD.A.2, 5.NBT.B.7, 6.NS.B.3, 7.RP.A.3

1

2

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.

Sierra Harvest (sierraharvest.org) FoodMASTER (foodmaster.org) USDA-ChooseMyPlate (choosemyplate.gov)



Amblent Foods Food that would normally be stored in a refrigerator but has been processed to be safely stored at room temperature increasing the shelf-life.

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

Aromatics A substance or plant emitting a pleasant and distinctive smell.

Certeal Crasss A grass whose starchy grains are used as food such as wheat, rice, rye, and oats.

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

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

Crossbreechings Crossing two varieties within the same species.

Culinarys Of or for cooking.

Certifiver: 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.

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 **Fulle Leathers** A sheet of dried pureed fruit.

Cenerates To bring into existence.

Teachers: To request a free copy of What's Growin' On? Extra! Extensions to enhance

the use of this newspaper, visit LearnAboutAg.org/wgo or call (800) 700-AITC (2482).

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

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

Hydropomeellys Growing crops in nutrient solutions without soil.

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

Oclongs Partially oxidized tea.

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

Originated Produced or created.

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

Potpotists Mixed flower petals and spices used to perfume a room.

Propagates A natural process of reproduction in plants and animals.

Rungents Having a strong taste or smell.

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

Rootstocks Root portion of a tree that another tree is grafted to.

Saches A small perfumed bag used to scent clothes.

Settors A detached living portion of a plant such as a bud or shoot.

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

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

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

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

Toxiess Relating to or caused by poison.

Umanife 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.

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.org California Farm Bureau Federation cfbf.org California Foundation for Agriculture in the Classroom LearnAboutAg.org California Walnut Board walnuts.org **Gills Onions** gillsonions.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

You CAN FREEZE FRESH Food

About California Foundation for

Agriculture in the Classroom

agriculture by all.

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.

California Foundation for Agriculture in the Classroom

is a 501(c)(3) nonprofit organization that provides educa-

tors with free standards-based resources about California

agriculture. The Foundation's vision is an appreciation of

or or

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.

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