

Celebrating 30 Years
of
Agriculture in the Classroom

14th Edition

What's Growin' On?

Celebrating
California's Top-Ten



California Foundation for
Agriculture in the Classroom

Extra! Extra! Classroom Extensions

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Introduction

Welcome! Thank you for your interest in California Foundation for Agriculture in the Classroom's (CFAITC) student activity newspaper, ***What's Growin' On? Celebrating California's Top-Ten***. Developed by educators like you and reviewed by industry experts, ***What's Growin' On?*** offers fun and engaging ways to teach and practice core academic skills while demonstrating the importance of agriculture in our lives.

EXTRA! EXTRA! Classroom Extensions contains ideas and opportunities for extending the content presented in the student activity newspaper. It includes some inquiry-based lab ideas for incorporating agriculture throughout your curriculum. Activity ideas are varied to help you meet the different learning styles of students in your classroom. Opportunities for group work, hands-on activities, and visual displays support the needs of ELL students as well as challenge GATE students.

The agriculture-themed examples and activities found in ***What's Growin' On? Celebrating California's Top-Ten*** are designed to motivate and inspire your students by connecting classroom lessons to real-life experiences and circumstances. This is accomplished by weaving agriculture into academics so students can better relate to food they eat, water they drink, clothes they wear, homes they live in, and all the open spaces they enjoy. Additionally, using the newspaper as an instructional tool allows young people to discover the relevance of their classroom studies by reading news stories, acquiring knowledge, forming opinions, and broadening their understanding of the world they live in.

California Foundation for Agriculture in the Classroom is dedicated to increasing the awareness and understanding of agriculture among California's educators and students. CFAITC provides educators with resources and programs that enhance agricultural literacy. To request a free teacher resource packet or a classroom set of the current edition of ***What's Growin' On? Celebrating California's Top-Ten***, order online at www.LearnAboutAg.org/wgo or contact CFAITC via e-mail (info@LearnAboutAg.org) or phone (800-700-2482).

MMM...Milk!

Extension Ideas

Mammals Make Milk

Milk is produced only by mammals. Cows are not the only mammals whose milk is consumed fresh or made into dairy products in the United States. Goat and sheep milk is also used to create dairy products such as cheese, yogurt and ice cream. Create a table or bar graph, comparing milk production (per day), milk fat, and calories per serving of dairy cow, goat, and sheep milk.

	Cow	Goat	Sheep
Yield / Day			
Calories per serving			
Milk Fat			

CA Standards: ELA CCSS: RL.3-8.1, RI.3-8.7, RF.3-5.3, RF.3-5.4a, W.3-5.8, SL.3-8.2, SL.3-8.3, SL.3-8.6, L.3-8.1, L.3-8.3; NGSS: 3-LS3.A, 3-LS3.B

Other mammals, such as the camel, reindeer and water buffalo are used in other parts of the world for important sources of protein from dairy products. Have students research to learn what kinds of dairy products are made from milk of these animals.

Working individually or in pairs, research and share findings with the class.

CA Standards: ELA CCSS: RL.3-8.1, RI.3-8.7, RF.3-5.3, RF.3-5.4a, W.3-5.8, SL.3-8.2, SL.3-8.3, SL.3-8.6, L.3-8.1, L.3-8.2, L.3-8.3; NGSS: 3-LS3.A, 3-LS3.B

Dishin' it Up

Students learn about nutrition by playing the *My Plate Match Game*. Go to:

www.healthyeating.org/Healthy-Kids/Kids-Games-Activities/My-Plate-Match-Game.aspx

CA Standards: ELA CCSS: RI.3-5.7, RF.3-5.4

Snack Attack

A Nutritious, Delicious Activity! Think of an afternoon snack that uses two of the five food groups. Keep it healthy to stay alert and strong! Some tasty examples: low-fat yogurt with apple slices; string cheese and veggie sticks. CA Standards: ELA CCSS: L3-5.1

Write out your own choices for a healthy snack!

1. _____
2. _____

Resources

California Foundation for Agriculture in the Classroom (www.learnaboutag.org)

- **Agricultural Fact and Activity Sheets:** Learn about California's dairy cattle industry, history, production, top producing regions (counties) and economic value of the commodity. There are also lesson ideas and additional resources for teachers.
- **Lesson Plan:** *Milk matters! Discovering Dairy* (Grades 4-6)
- **Ag-Bites:** *Ice Cream in a Bag* (Grades 3-5), *Got Guts?* (Grades 3-5)

Dairy Council of California (www.healthyeating.org)

- **Dairy Farm:** game where students learn about dairies and dairy animals
- Various games and activities for children to learn about nutrition

National Agriculture in the Classroom (www.agclassroom.org)

- **Lesson Plan:** *Milk or Meat? Dairy or Beef?*
- Various Resources, Lessons

Books

- Basel, Roberta. ***From Milk to Cheese***. Capstone Press, 2006.
- Christian, Eleanor and Lyzz Roth-Singer. ***Let's Make Butter***. Capstone Press, 2000.
- Dickman, Nancy. ***Dairy***. Heinemann-Raintree, 2012.
- Doyle, Sheri. ***Cows***. Capstone, 2013.
- Gibbons, Gail. ***The Milk Makers***. Aladdin, 1987.
- Hall, Margaret. ***Cows and Their Calves***. Capstone Press, 2003.
- Lee, Sally. ***The Delicious Dairy Group***. Capstone Press, 2012.

Websites

- Dairy Council of California
www.HealthyEating.org
- California Milk Advisory Board
www.RealCaliforniaMilk.com

Almonds in a Nutshell

Extension Ideas

An Almond History Timeline

Have students create a timeline by placing events in the correct chronological order.

Write neatly in cursive. CA Standards: ELA CCSS: RI.3-5.7, L.3.1j, L.4.1h, L.3-5.2

- 1900 AD: California's almond industry was well established.
- 1400 BC: First record of almonds growing.
- Today: Almonds are California's top agricultural export and largest tree nut crop in total dollar value and in acreage.
- 600-900 AD: Almonds growing well in Spain, Morocco, Greece, and Israel; travelers ate almonds along Silk Road going to China .
- 1352 BC: King Tut is buried with almonds, in preparation of his journey to the afterlife.
- 1700s AD: Franciscan Padres brought the almond tree from Spain to California.
- 2000 AD: California almond crops cover more than half a million acres in the San Joaquin and Sacramento Valleys.
- 2000 BC: Hebrew literature mentions almonds (Genesis 43).
- 100 AD: Romans showered newlyweds with almonds.

It's a Fact, Jack

Almond growers plant at least two varieties of almond trees in alternating rows because they are not self-pollinating (trees can't pollinate themselves). There is research being done on self-compatible almond trees. Have students research and find which nut or fruit trees are cross-pollinated or self-fertile (commonly called self-pollinating or self-compatible). Note the type of fruit or nut, the varieties of the fruit or nut, and if the variety is self-pollinated or cross-pollinated. Students create poster-sized charts with information and discuss their findings.

CA Standards: ELA CCSS: L.3-5.2; SL.3-5.1, SL.3-5.3, SL.3-5.6, RF.3-5.4, RF.3-5.6

Inquiry Activity

Pollination Practice

Students can practice cross pollinating plants. Take two geraniums, African violets or other flowering plants of differing colors. Using a fine paintbrush, remove pollen from the stigma of the first plant and brush it onto the pistil of the second plant. Observe and record (in words and illustrations) what happens – after a wait, students will learn they have created a hybrid!

CA Standards: ELA CCSS: W.3.4, RI.3.7; NGSS 3-LS1, 4-LS1.A

Resources

California Foundation for Agriculture in the Classroom (www.learnaboutag.org)

- **Agricultural Fact and Activity Sheets:** Learn about California's almond industry, history, production, top producing regions (counties) and economic value of the commodity. There are also lesson ideas and additional resources for teachers.
- **Lesson Plan:** *California Almonds: An Almond Story* (Grades 3- 5)

Almond Board of California (www.almondboard.org)

- *An Almond Story* activity book
- *An Almond Story* video (www.youtube.com/watch?v=4jUaJ7ebhXo)

Websites

- California Almond Board
www.almondboard.com

California: a GRAPE State!

Extension Ideas

Fun Facts – Aren't They Grape?

Have students use the “fun facts” to write a paragraph. In small groups, share paragraphs. CA Standards: ELA CCSS: RF.3-5.3, R.3-5.4, W.3-5.2, W.3-5.5, SL.3-5.1, SL.3.3, SL.3.6, SL.6-8.6

Grape Facts:

- Kids need five servings of fruits and vegetables every day.
- Grapes are packed with vitamin K. This keeps our blood healthy.
- Grapes have antioxidants, which keep us healthy and strong.
- Vitamin C helps fight disease - and grapes have it!
- Frozen grapes make a cool and healthy snack.
- Around the world there are more than 8,000 varieties of grapes.
- There are seven different grape colors. Can you name them? (answers: red, green, white, black, purple, blue, and golden)
- America's oldest grapevine is 400 years old and is in North Carolina.
- More than 928,000 acres in California are planted in fresh grape, wine, and raisin vineyards.
- Grapes can be eaten fresh but also can be made into juice, jam, jelly, vinegar, wine, or raisins.
- 99% of US grown grapes are from California.
- Viticulture is the production and study of grapes.

Raisin Facts:

- Raisins used to be so valuable that the Romans used them as currency.
- Raisins are high in iron which helps keep you strong.
- Most raisins are made from Thompson seedless grapes which are green.

How Much?

A Serving size for raisins is $\frac{1}{4}$ cup. Next time you eat raisins, count and find out how many make a $\frac{1}{4}$ cup. $\frac{1}{4}$ cup raisins = _____ raisins. How many raisins are in 2 servings? _____ In 4 servings? _____ CA Standards: Math CCSS: 3.OA.1, 3.OA.3, 4.OA.1

Grape Math! Here's a Bunch!

1. 928,000 acres in California grow grapes. Find the percentage and fill in the following table:

California	Percent	Total Acres
Table Grapes		121,000
Wine Grapes		615,000
Raisin Grapes		192,000
Total	100	928,000

(Answers: table grapes 13%, wine grapes 66%, raisin grapes 21%)

2. You can harvest about 2.8 tons of raisins per acre. Using your total acres from the chart for raisins, how many tons of raisins are grown in California?

(answer: 537,600 tons)

3. If $\frac{1}{4}$ cup (one serving) of raisins equals approximately two ounces, how many servings can you get out of 2.8 tons of raisins? (Hint: one serving = $\frac{1}{4}$ cup = 2 ounces, 1 ton = 2,000 pounds, 1 pound = 16 ounces)

(answer: 2.8 tons = 5600 lbs., 5600 lbs. = 89,600 oz., 89,600 oz. = 44,800 servings)

CA Standards: Math CCSS: 3.OA.1, 3.OA.3, 3.OA.7, 4.OA.1, 4.OA.3, 4.NF.3d, 4.MD.2, 5.MD.1

Inquiry Activity

From Grape to Raisin!

Try this experiment: Take 5 grapes and place on a tray. Keep them in a sunny place in your house. Take an additional 5 grapes and place them on a tray outside in the sun. Observe day to day. Record changes you notice. Note when the grapes start to wrinkle. Note when they look like raisins. How long did it take? Is it the same if they are dried outside? Compare and share your results.

CA Standards ELA CCSS: L.3-5.1, W.3-5.3, W.3-5.7

Resources

California Foundation for Agriculture in the Classroom (www.learnaboutag.org)

- **Agricultural Fact and Activity Sheets:** Learn about California's grape industry, history, production, top producing regions (counties) and economic value of the commodity. There are also lesson ideas and additional resources for teachers.

Books

- Adler, Karen. ***The Story of Raisins***. Karen Adler Books, 2005.
- Adler, Karen. ***California Grapes***. Karen Adler Books, 2004.
- Gonzales, Lydia A. and Valentin Gonzalez. ***Discoveries in the San Joaquin Valley Grapevines***. Trafford.com, 2007.
- Ryan, Pam Munoz. ***How Do You Raise a Raisin?*** Charlesbridge Publishing, 2003.

Websites

- California Raisins
www.raisins.org
- California Table Grape Commission
www.freshcaliforniagrapes.com
- Concord Grape Association
www.concordgrape.org
- Sun-Maid Growers of California
www.sunmaid.com

Follow the Cattle Trail

Extension ideas

You Can Lead Them to Water

Cattle can drink 3 - 30 gallons per day of water. The University of Nebraska states that cattle drink 1 gallon per 100 pounds of body weight in the coolest weather to nearly 2 gallons per 100 pounds of body weight in the hottest weather. (For more information see beef.unl.edu/amountwatercowsdrink). Out on the range, cowboys utilize natural resources as much as possible, often creating reservoirs or ponds that capture rainwater for cattle to drink. Cattle can also drink from other surface water sources, such as creeks or lakes, or from large troughs containing water from wells or, in some cases, from water that has been trucked in by the cowboys. Create a map of a ranch, showing watering sites and sources for the herd. How many head in the herd and how much total water will the herd require daily?

CA Standards: Math CCSS: 3.OA.1, 4.OA.3

Round ‘Em Up: Cattle Drives

Early cattle-drives in American history headed west to California after gold was discovered and the demand for beef was high. Cattle worth \$5 - \$10 a head in Texas were worth twenty times that in San Francisco! Most cattle-drives to California took five or six months and started in Texas. By the mid-1850s, most cattle were shipped by rail and cattle ranching in California was well established, making the long cattle drives unnecessary.

- Create “Help Wanted” posters. Each poster should say “Help Wanted”, followed by the job title (example: cook, wrangler, trail boss, cowboy, etc.), a list of duties, pay, etc. Share posters with class. CA Standard: ELA CCSS: L.3-8.3
- Students can map routes of early cattle drives to California and other places in the west. Use the internet to research maps and information to draw a map.
CA Standard: ELA CCSS RI.3-6.7; Visual Arts Content: 5.5.3
- Brands helped early ranchers identify their cattle, just as they continue to do today. All California Missions had their own individual brand. Research brands (past and present) and design a personal brand.
CA Standards: ELA CCSS: RL.3-5.1,7, RF.3-5.2
- Cattle drive music and songs (Texas collection); western ballads and songs are available at the Library of Congress website. Become a cowboy poet – read and

share poems of cowboys, then write your own. CA Standards: ELA CCSS: RL.3-5.1, RL.4-8.2, RL.6-7.4, L.3.5.5, SL.3-5.2, 4, 6, L.3-5.1, L.3-8.2, L.3-5.3

Be a Cowboy for a Day

Research activities on a Dude Ranch. Be the activities director and create a schedule of activities and events for the day. Teachers: turn your classroom into a Dude Ranch! Create activity centers for brands, roping, cooking, etc. CA Standards: ELA CCSS: L.3-5.2, 3

A Day in the Life

Did you know? Half of beef is used for food and the other half goes into by-products! Students can write a paragraph about a day in their life using as many beef products or by-products as they can. Additionally, students can create a poster of beef by-products. Use ideas you've learned about on the beef page as well as those listed below.

Research additional products and by-products on line. Other beef by-products: soap, deodorant, bandages, glue, sports equipment, crayons, shoes, clothing, cars, tires, asphalt, paper, dog food and furniture, just to name a few.

CA Standards: ELA CCSS: RI.3.5, RI.5.7, RF.3-5.4, L.3-8.1, 2, L.3-7.3

Resources

California Foundation for Agriculture in the Classroom (www.learnaboutag.org)

- **Agricultural Fact and Activity Sheets:** Learn about California's beef cattle industry, history, production, top producing regions (counties) and economic value of the commodity. There are also lesson ideas and additional resources for teachers.
- **Ag-Bites:** *Cowboy Brands* (grades 3- 4); *"Got Guts?"* (grades 3-5) and, *Roll of the Genes* (grades 3 -5)
- **Lesson Plan:** Bon a la Beef, a partnership/project between California Foundation for Agriculture in the Classroom and the California Beef Council, includes four video clips featuring students educating students, teachers and the public about beef, its nutritional value, proper handling and preparation. Check it out at learnaboutag.org/resources/table_bon.cfm.
- **Learn About Ag... Beef:** Check out all of the beef resources on this one page at learnaboutag.org/resources/learn_beef.cfm.

National Agriculture in the Classroom (www.agclassroom.org)

- **Lesson Plans:** Beef Basics, Milk or Meat? Dairy or Beef?
- Many other lessons covering science, history/social studies and nutrition

Books

- Gunderson, Mary. **Cowboy Cooking**. Blue Earth Books, 2000. (Recipes)

- Peterson, Cris. ***Amazing Grazing***. Boyds Mill Press, 1996.
- Scott, Ann Herbert. ***A Brand is Forever***. Clarion Books, 1993.

Websites

- California Beef Council
www.calbeef.org
- Certified Angus Beef
www.certifiedangusbeef.com
- National Cattlemen's Beef Association
www.beef.org
- San Luis Obispo Cattlewomen
www.cattlewomenslo.org

Pistachios Make Top-Ten!

Extension Ideas

Did you hear the news?

Pistachios became a Top-Ten crop in 2015!

Just the Facts:

- The Pistachio (*Pistacia vera*) originated in western Asia and Asia Minor.
- California leads the nation in Pistachio production. California produces 98% of the nation's pistachio crop.
- California's first commercial crop was harvested in 1976.
- Pistachios are a 1.6 billion-dollar commodity in California.
- Hong Kong, Canada, Belgium, China, Germany and the Netherlands are the top export markets for California Pistachios.
- These nuts are found in markets all over the world! They are the #5 top export from California behind almonds, dairy, walnuts, and wine.
- Pistachios thrive in California weather and grow extremely well in our state. The leading counties are Kern, Tulare, Fresno, Madera and Kings.
- The harvest season is August - October when 221,000 acres are harvested mechanically.
- The yellow-green and purplish color of the pistachio is due to antioxidants and polyphenols found in the kernels and skin.

Map It!

Using maps and other on-line resources, identify California on a blank outline map of the world. Then, draw a line from California to the top 5 export markets. With another color pen, draw a second line to California from the pistachio's origin (Persia/Iran).

CA Standards: ELA CCSS: RI.3-5.7

Smile!

Create a pistachio emoji. (See www.getcrackin.com for ideas.)

CA Standards: Visual Arts Content: 4.5.2

Art, Anyone?

Use shells to create original artwork. Create a small mural or mosaic, decorate flower pots, and make decorative wreaths, jewelry, and a name plaque. Anything you can imagine. Have fun!

Resources

California Foundation for Agriculture in the Classroom (www.learnaboutag.org)

- **Agricultural Fact and Activity Sheets:** Learn about California's pistachio industry, history, production, top producing regions (counties) and economic value of the commodity. There are also lesson ideas and additional resources for teachers.

Websites

- California Department of Food & Agriculture
Pistachio crop data: www.cdfa.ca.gov/statistics/pdfs/2015report.pdf
- American Pistachio Growers
www.americanpistachios.org
- Western Pistachio Association
www.westernpistachio.org

Strawberry Strategies

Extension Ideas

Imagine this...

Check out the *Imagine this...* award winning story from 2013, **Strawberry Troubles** by Allison Wei. You can find this story and all state winning stories at the California Foundation for Agriculture in the Classroom website, www.LearnAboutAg.org. Select “Programs & Events” and then “Story Writing Contest.” The annual contest is for students in grades 3-8. Students can write their own story inspired by California agriculture! Entries for the *Imagine this...* story writing contest are due November 1 each year. CA Standards: ELA CCSS: W.3-8.2, 3

Did You Know?

- A strawberry is not botanically a fruit. It is not really a berry, but the enlarged receptacle of a flower. The “seeds” on the surface of a strawberry are not seeds, but rather achene (a small, dried, hard fruit). Did you know there are 200 achenes in the outside surface of a strawberry?
- There are nearly 40,000 acres of strawberries grown in California. In 2014, more than 2.3 billion tons of strawberries were harvested. (What is the average harvest on an acre of land?) California strawberries are eaten throughout California and the world. Canada, Mexico, Japan and Hong Kong are the top importers of California strawberries. (Can you name some other California commodities exported to these countries?)
- The modern strawberry is a hybrid (cross) between two strawberries native to the Americas. *Fragaria virginiana* is native to North America, while *Fragaria chiloensis* is native to Chile. During the 1700s, both strawberries were sent to Europe where it is assumed they grew next to each other in gardens and the hybridization occurred!

Try this:

- The strawberry’s scientific name is *Fragaria, x ananassa*. Find out how plants are named. Find two other fruits and list their scientific and common names.
CA Standards: ELA CCSS: RL.3.1, RI.3.5 RF.3-5.2,4
- Strawberries are hybrids. Find two other popular fruits or vegetables that are hybrids. List the hybrids and cite the source of information (book, website, etc.).
CA Standards: ELA CCSS: RL.3.1, RI.3.5, FR.3-5.2,4

- Throughout history, strawberries have been used for other things besides a food source. Research and find two items for which strawberries have been used and by whom. List the usage and cite the source.

CA Standards: ELA CCSS: RL.3-5.1, RI.3.1,5, RF.3-5.2,4, L.6-8.2

Inquiry Activities

Strawberry DNA

Check out these Strawberry DNA lab activities:

- www.scientificamerican.com/article/squishy-science-extract-dna-from-smashed-strawberries
- genetics.thetech.org/online-exhibits/do-it-yourself-strawberry-dna
- www.stevespanglerscience.com/lab/experiments/strawberry-dna

Resources

California Foundation for Agriculture in the Classroom (www.learnaboutag.org)

- **Agricultural Fact and Activity Sheets:** Learn about California's strawberry industry, history, production, top producing regions (counties) and economic value of the commodity. There are also lesson ideas and additional resources for teachers.

University of Illinois Extension (www.extension.illinois.edu/strawberries/history.cfm)

- Berries & More (History & Lore)

Sources

- www.ipm.missouri.edu/meg/2012/5/Strawberry-A-Brief-History
- www.californiastrawberries.com

Websites

- California Strawberry Commission
www.californiastrawberries.com

Why Walnuts?

Extension Ideas

What is a drupe?

Walnuts are considered a “drupe” because they have a fleshy fruit surrounding a shell with a seed inside. Other drupes include almonds, apricots, cherries, dates, pecans, peaches and plums. Have students look up the definition of drupe in a dictionary on-line. Have them write, in their own words, the meaning. Illustrate the meaning. In groups, have them share out and discuss. CA Standards: ELA CCSS: RI.3.1,5, RF.3-5.2, SL.3-5.1, SL3.6

Did you know?

Walnuts were brought to California by the Spanish Padres at the missions. The Franciscan Fathers brought “mission” walnuts that were small with hard shells. Indigenous peoples of California used American Black Walnuts as a food source (eaten fresh and in prepared dishes) and for medicines for humans and animals. A tonic to treat rheumatism aches and pain was made using the tree bark. Juice from the husk was used to clean wounds and to rid dogs of intestinal worms.
(Sources: www.aihd.ku.edu/foods/black_walnut.html; www.walnuts.org)

Do You See What I See?

Luther Burbank, an American Horticulturist (1849-1926), developed the Paradox walnut, a hybrid between a black walnut and an English walnut. Burbank grafted Paradox black walnut rootstock onto English walnuts. Have students research, draw and diagram an example of Mr. Burbank’s tree:

- The three parts of a walnut tree: rootstock, graft union and scion
- English walnut in shell and opened: shell, shell-opened, kernel
- Walnut cluster: leaf, fruit, shell, hull, stem
- Flowering walnut branch: leaf, female flower, catkin

CA Standards: ELA CCSS: RL.3-5.1, RI.3.5, 7, RF.3-5, 4, W.3.8, RST.6-8.7; NGSS: 4-LS1.A, MS-LS1.B

Resources

California Foundation for Agriculture in the Classroom (www.learnaboutag.org)

- **Agricultural Fact and Activity Sheets:** Learn about California walnuts - history, production, top producing regions (counties) and economic value of the commodity. There are also lesson ideas and additional resources for teachers.

- **Ag-Bites: Link'Ems** (Grades 6-8) link raw commodities with commonly used products. Check out the section on walnuts.
- **Lesson Plan Units:** A Walnut Orchard Through the Seasons (2-3), The Importance of Grafting (4-5), Naturally Nutritious (6-8)

Websites

- Blue Diamond Growers
www.bluediamond.com
- Walnut Marketing Board
www.walnuts.org

'Lettuce' Introduce You

Extension Ideas

How does Your Garden Grow? A Desktop Garden

You will need a small lid, paper towel, lettuce seeds, and foil or cardboard to cover your lid. First, take the lid and fit it with a paper towel, cut it to size so it fits in nicely. Moisten the paper towel and sprinkle a few seeds onto it. Cover with foil or cardboard. Check every day and keep moist by adding a drop or two of water. Keep track of when you planted your seeds and how long it takes for them to grow. Keep a journal to track growth for two weeks, include: date, drawing, and 2-3 written observations. After two weeks, write a conclusion and transfer your lettuce plants to a larger container. Look online for instructions for desktop gardens at www.learnaboutag.org/resources/bites/desktop.pdf

Lettuce: Not Just for Salads Anymore

Create lettuce wraps, cups and bowls. Instead of bread, use lettuce to wrap or contain a healthy snack or meal. Use the recipe below for a quick and delicious classroom snack!

Recipe for Veggie Lettuce Wrap

Ingredients:

- 1 cup each of black beans, black eyed peas (or other bean), corn kernels
- 1 each, chopped: tomato, avocado, green pepper (approx. 1 cup each)
- 2 tablespoons of ranch dressing
- 12 Romaine lettuce leaves (or other lettuce as desired)

Directions:

Combine beans and veggies. Pour dressing over mixture. Scoop 1/3 cup of mixture into the center of a large lettuce leaf and roll up to eat.

'Lettuce' Do Sum Math

If this recipe serves 12, figure out the amount of ingredients needed if the recipe is doubled, tripled or halved.

Recipe halved: _____

Recipe doubled: _____

Recipe tripled: _____

Answers:

Halved: ½ cup of each: black beans, black eyed peas, corn kernels, chopped tomato, avocado, green pepper; 1 tablespoon dressing, 6 lettuce leaves.

Doubled: 2 cups each of black beans, black eyed peas, corn kernels, chopped tomato, avocado, green pepper; 4 tablespoons dressing, 24 lettuce leaves.

Tripled: 3 cups each of black beans, black eyed peas, corn kernels, chopped tomato, avocado, green pepper; 6 tablespoons dressing, 36 lettuce leaves.

How many calories are there in each ingredient? Find the total calories. For each portion, divide total calories by 12. (Recipe for 12 servings)

Black beans ____ calories (1 can)

Black eyed peas ____ calories (1 can)

Corn kernels ____ calories (1 can)

Tomato ____ calories (1cup)

Avocado ____ calories (1 cup)

Bell Pepper ____ calories (1 cup)

Ranch dressing ____ calories (2 tablespoons)

Romaine leaves ____ calories (6 leaves)

Total calories _____

Calories per serving _____

Challenge: Students can create their own signature Lettuce Wraps. Create a recipe, listing ingredients and directions. Be sure to share your recipes with others!

Resources

California Foundation for Agriculture in the Classroom (www.learnaboutag.org)

- **Agricultural Fact and Activity Sheets:** Learn about California Lettuce - history, production, top producing regions (counties) and economic value of the commodity. There are also lesson ideas and additional resources for teachers.

Books

- Salas, Laura Purdie. **Lettuce Introduce You: Poems About Food.** Capstone Press, 2009.

Say Hay!

Extension Ideas

Hay Maze Crossword Puzzle

R E H T A W S H Y W H S H A M
O D T R S W R H S A I T A F N
C Q E M E E T X Y H K R R L V
D G T I C O E B B E O A R A N
X Q C H M N A D Z K D W O F H
L H C I B L O E D R Q H W L P
B R T E E G E I N R F K B A D
C B E R M U D A W R I A E R J
J T H K Q G N T E X A L D G F
B H I S S O I O R K L B L S G
Y X Y E K O B C U D A A H R S
X A I Q W X W A C U A R A B T
H C O M M O D I T Y B S Y A K
G A K B L H F Y N G S A O A Y
F F A H C E M S Y G H X G E H

ALFALFA
CHAFF
GRASS
HAYRAKE
SEEDDRILL
SWATHER

BARN
COMMODITY
HARROWBED
HAYSQUEEZE
SOWING
TIMOTHY

BERMUDA
CURE
HAYBALER
OAT
STRAW

What Kind of Hay?

Pick an animal that eats hay and develop a care plan that includes the type of hay it requires and why. Include the type of shelter, water, veterinary care, and any other important requirements. Animals that eat hay could include horses, cattle, goats, sheep, rabbits, and guinea pigs.

CA Standards: ELA CCSS: RL.3-8.1, RI.3-5.1, RI.3.5, RI.3-5.7, RF.3-5.3, 4, W.3-8.4, 7,8, SL.6-8.4

Hay, Have I Got Questions For You!

These and other questions generated by students can be researched. Students can find the answers, create charts or posters and then present their findings to the class.

- What types of grasses are used for hay?
- Straw vs. hay: What is hay? What is straw? How are they different? What are hay and straw used for?
- Bales – Big, small, round, or rectangular. How are bales made and why are there so many kinds? What are all the steps of making a bale, from cutting to storing hay?

CA Standards: ELA CCSS: RL.3-8.1, RI.3-5.1, RI.3.5, RI.3-5.7, RF.3-5.3, 4, W.3-8.4, 7, 8, SL.6-8.4

NIE Activity: For Sale

Check your local paper or the California *Ag Alert* (www.agalert.com) – printed or on-line- for equipment for harvesting hay or hay for sale. Then create your own ad.

CA Standards: ELA CCSS: L.3-6.2, 3

Resources

California Foundation for Agriculture in the Classroom (www.learnaboutag.org)

- **Agricultural Fact and Activity Sheets:** Learn about California Alfalfa - history, production, top producing regions (counties) and economic value of the commodity. There are also lesson ideas and additional resources for teachers.

Tomatoes Here, Tomatoes There, Tomatoes Everywhere!

Extension Ideas

How Do You Like Your Tomatoes?

Tomatoes are found in many meals throughout the day. What part of your meal contains tomato?

Pizza _____

(answer: sauce)

Hamburger with French Fries and Ketchup _____

(answer: ketchup)

Spaghetti and Meatballs _____

(answer: spaghetti sauce)

Tacos and Salsa _____

(answer: salsa)

Barbeque Ribs with BBQ Sauce _____

(answer: BBQ sauce)

Veggie Omelet _____

(answer: added veggies)

Name your favorite meal that contains processed or fresh tomatoes _____

Did You Hear That One?

There are many tomato jokes. Below are just a few. Laugh all you want (just don't throw tomatoes at us, please!)

- What did the papa tomato say to the baby tomato? Hurry and Ketchup!
- What did the macaroni say to the tomato? Don't get saucy with me!
- How do you fix a sliced tomato? With tomato paste!

Activity: Write jokes or riddles, using tomatoes as the "main ingredient."

CA Standards: ELA CCSS: L.3-6.2, 3

Tomato Venn Diagram

Using the following facts, create a Venn diagram to show differences and similarities between processed and fresh tomatoes. (Feel free to add more facts.)

Processing Tomatoes:

- $\frac{3}{4}$ of tomatoes eaten in the US are in a processed form.
- Are machine harvested.
- Need to have a higher percentage of soluble solids to make more tomato paste/product.
- Have thicker skins.
- Are harvested when they are ripe and red.
- Are canned within 6 hours of harvest.
- Tomato consumption has increased by 30% in the last 20 years mostly in processed tomatoes
- Have a firmer skin.

Fresh Tomatoes:

- Are made of 95% water.
- Are the 4th most popular fresh produce item in the US.
- Are the # 1 most popular plant to grow in a home garden.
- Are harvested by hand.
- Are harvested when they are green and will still ripen more.
- For best flavor, tomatoes should be eaten at room temperature

CA Standards: ELA CCSS: RF.3-5.3, .4

Tomatoes – Delicious and Nutritious!

Match the function with the nutrient.

- _____ 1. Bone strength
- _____ 2. Eye health
- _____ 3. Digestion
- _____ 4. Cell strength
- _____ 5. Heart health

- a. Vitamin A
- b. Fiber and Potassium, Vitamin C
- c. Antioxidant
- d. Vitamin K
- e. fiber

Answers: 1. d, 2. a, 3. e, 4.c, 5. b

Tomatoes Everywhere Postcard

The tomato is considered the world's most popular fruit. Create a postcard advertisement promoting tomatoes that includes reasons why people should buy them. Use information learned from the tomato page.

CA Standards: ELA CCSS: L.3-5.3

Did You Know?

- For fresh tomatoes, the best storage temperature in the warehouse and during transport is 54 degrees Fahrenheit with 85-90% relative humidity.

- Processing tomatoes are harvested by machine and then transported to a plant to be processed into tomato paste, pasta sauce, pizza sauce, salsa, etc.
- Processing tomatoes have a firmer skin that allows them to be transported without getting squashed. You might see processing tomatoes being hauled to a cannery or even on the road, where they sometimes bounce out of the truck, just like a ball!
- A typical tomato truck holds 300,000 tomatoes.

Resources

California Foundation for Agriculture in the Classroom (www.learnaboutag.org)

- **Agricultural Fact and Activity Sheets:** Learn about California Processing Tomatoes - the history, production, top producing regions (counties) and economic value of the commodity. There are also lesson ideas and additional resources for teachers.
- **Lesson plan:** *Tomato Trivia (K-3)*

Books

- Alarcon, Francisco X. ***Laughing Tomatoes***. Children's Book Press, 2005.
Poems
- Morganelli, Adrianna. ***The Biography of Tomatoes***. Crabtree Publishing, 2007.

Websites

- California Tomato Commission
www.tomato.org
- California Tomato Growers Association
www.ctga.org

From Sowing to Growing... Nursery Plants!

Extension Ideas

Design a New Plant

Pretend you are a plant scientist. Design a new plant. It can grow and look like whatever you want. What are its requirements to survive? Draw and label your plant; show details. Argue/explain why your new plant is important to the world.

CA Standards: NGSS: 5-LS-1C

Nursery Rhymes Grow on You...

Just like nurseries are a place for young children to grow, plant nurseries grow young plants. We thought it would be fun to learn about nursery rhymes! They have been around since the 1600s. Research nursery rhymes. Find the countries and time periods they are from. Try writing (and sharing) your own nursery rhyme related to the garden. Here's a familiar one:

Mary, Mary quite contrary
How does your garden grow?
With silver bells and cockleshells
And pretty maids
all in a row

CA Standards: ELA CCSS: SL.3-5.6, RL.3-5.3, 4, RI.3-5.1

Horticulture Super Stars

Horticulturists are plant experts. They study plants and work with plants. Research and do a power point presentation on one of the following famous experts. Include their education and training, their jobs, and some interesting discoveries or contributions they made. CA Standards: ELA CCSS: RI.3.5, RF.3-5.3, 4, W.3-5.2, 7, SL.3-5.4

- Gregor Mendall (1822-1884): Geneticist
- Barbara McClintock (1902-1992): Cyto-geneticist
- Thomas Jefferson (1743-1826): Farmer, Experimenter
- John "Johnny Appleseed" Chapman (1774-1845) Nurseryman
- George Washington Carver (1860-1943) Botanist, Chemist, Agronomist
- Luther Burbank (1849-1926): Plant Breeder

Are You a Fruit or a Nut?

Nuts are considered a fruit! They grow from a flower and are a seed so they are considered a fruit, just like tomatoes, cucumbers, squash, and pumpkins! What makes a fruit a fruit? Find out more about the fruits of your choice, including almonds, walnuts, tomatoes, cucumbers, peaches, apricots, squash, and pumpkins. Compare them, make a poster and give a report to your class!

CA Standards: ELA CCSS: RI.3-5.3, RI.3.5, RF.3-5.3, 4, SL.3-5.4

Sod is Grass!

Did you know? Instead of growing a lawn from seed, which can take a while, sod is grown in nurseries and cut and rolled to be transported to businesses and homes. Special soil preparation takes place, and irrigation systems need to be in place before the sod is laid.

Activity: Homesteaders of the 1800s built their houses out of sod from prairie grasses. Working in a group, research homesteaders and sod houses. Write a report and give a group oral presentation to your class. Check out the following sites to get started!

CA Standards: ELA CCSS: RL.3.1, RI.3.1, 5, RI.3-5.8, RF.3-5.3, 4, W.3-5.2, 6, 7, SL.3-5.4

amhistory.si.edu/ourstory/activities/sodhouse/more.html

www.pbs.org/wnet/frontierhouse/frontierlife/essay4_2.html

Resources

Books

- Baron, Robert C. ***The Garden and Farm Books of Thomas Jefferson***. Fulcrum Publishing, 1988.
- Kalman, Bobbie. ***Hooray for Orchards***. Crabtree Publishing Company, 1997.
- Overbeck, Cynthia. ***How Seeds Travel***. Lerner Publications, 1993.
- Monroe, Judy. ***George Washington Carver: Scientist and Inventor***. Capstone Press, 2006.
- Moses, Will. ***Johnny Appleseed: The Story of a Legend***. Penguin Group, 2004.
- Quackenbush, Robert. ***Here a Plant, There a Plant, Everywhere a Plant, Plant: A Story of Luther Burbank***. Luther Burbank Home & Gardens. 1995
- Rand, Casey. ***The Technology of Farming: Producing Vegetables***. Capstone, 2013.
- Trumbauer, Lisa. ***The Story of Orange Juice***. Yellow Umbrella Books, 2006.

Field Trips and Guest Speakers

- Counties throughout California have Farm Days or Ag Day educational events for school students. Check with your local Farm Bureau or CFAITC to see if an event is scheduled in your county.
- Milk Advisory Mobile Dairy Classroom
- Arrange a visit to a local Farmers Market, farm, fair or other agricultural operation.
- Check out historical farms and local museums such as the Luther Burbank Home & Gardens, Santa Rosa.
- Invite in a Guest Speaker (agriculturalists – production ag business, 4-H or FFA members).