Taste and Teach
April - Asparagus

Five Fun Facts About Asparagus!

• Asparagus can continue to grow after being cut!
• Typically, one bunch of asparagus contains 10 to 12 spears.
• Asparagus is harvested by hand.
• Typically, the thicker, greener spears of asparagus are more tender.
• The lily flower is related to asparagus.

Four Fun Teaching Ideas!

• Watch this video on asparagus from the National Agriculture in the Classroom Organization: https://www.youtube.com/watch?v=MJz2ZLm852s
• Measure and calculate the diameter of asparagus spears. Determine whether each one would be classified as standard, large, extra large or jumbo. See the Asparagus Ag-Bite activity and its supplemental worksheet.
• Science experiment: place cut asparagus in a jar with water, along with tulips or daffodils. Measure any growth that occurs.
• Take a poll! Have students raise their hands to show whether or not they have ever eaten asparagus before. Determine which students like or dislike asparagus. Graph and compare the findings.

Explore all the great asparagus resources in this section!
Varieties – Asparagus is available in a variety of sizes; however, size has no bearing on flavor, texture or tenderness. Today, 98% of California’s asparagus production is marketed as a fresh green product with the remaining two% used for processing.

The most common variety is University of California 157 (UC157), which is adapted for warm temperatures and moist soils. Other green-colored varieties include Brock and Ida Lea. The University of California has developed a new variety, UC115, which will soon be in commercial production. It has a longer green stock and tighter tip than current, commercial varieties. Asparagus is also available in white and purple. White asparagus, which grows from the same crown as green asparagus, is shielded from the sun by straw or dirt to prevent the plant from developing chlorophyll, a photosynthetic green substance. Purple Passion produces purple spears which turn green when cooked.

Commodity Value – California produces a majority of the nation’s supply of fresh, green asparagus. The value of this California crop has declined because of increased foreign competition. Growers export 10-15% of their production to countries including Canada, Japan, and Switzerland.

Top Producing Counties – Asparagus producing counties include Imperial, Monterey, Fresno, Contra Costa, Kern, Sutter, Kings, Merced, Sacramento, and San Joaquin.

Nutritional Value – Asparagus is low in calories, contains no sodium or fat, and is an excellent source of potassium, folic acid, and dietary fiber. One five-spear serving contains 20 calories and two grams of protein. Asparagus contains antioxidants which are beneficial in the prevention of certain cancers and is a significant source of vitamin C, vitamin B₆ and thiamin.

For additional information: (916) 690-3911
Website: www.calasparagus.org
Lesson Ideas

• Asparagus is measured one inch above the bottom of the stem. Using various sizes of asparagus, determine the circumference, radius, and diameter at this point.
• Bring in a unique asparagus recipe to share. Convert the ingredient measurements in order to provide enough servings to feed the whole class.
• Place cut asparagus spears, tulips, and daffodils in a glass of water. Calculate any growth that occurs.
• Calculate the number of standard crates needed by a grocer who wants to stock 200 lbs. of asparagus.
• On a map, locate California’s primary asparagus production regions.

Fantastic Facts

1. The lily, a type of flower, is related to the asparagus plant.
2. Asparagus contains protein, potassium, fiber, vitamin C, vitamin B6, and antioxidants.
3. There are 10 to 12 spears in a typical one-pound bunch of asparagus.
4. White asparagus is green asparagus that has not been exposed to the sun.
5. Asparagus is harvested by hand.
6. Labor accounts for 75% of the cost of growing asparagus.
7. Asparagus can continue to grow after it is cut.

Introduction: It is important to understand that both cooperation and competition are valuable yet challenging components of the business world. This is especially true in asparagus production. More than 75% of asparagus production costs are associated with labor including planting, harvesting, packaging, and shipping. Additionally, in recent years the value of California asparagus production has declined due to international competition in places where labor costs are lower.

Objective: Students will plan, perform, and compare methods for harvesting asparagus in this classroom simulation.

California Standards: NGSS: 3-5-ETS1-1, 3-5-ETS1-2, MS-ETS1-1, MS-ETS1-2, HS-ETS1-3

Materials: Green construction paper, scissors, shoe boxes, rubber bands.

Procedure:
1. Divide the students into teams of five or six students.
2. Designate one area “the field” where you place 10 sheets of green construction paper and two pairs of scissors for each group.
3. Designate another area, at least 25 feet away, as “the end of the field row.” Place 20 rubber bands and a shoe box at this end for each group.
4. Explain that the green construction paper represents asparagus growing in a field. They are to cut 1-inch strips of paper, get it to the end of the row, bundle it into bunches of 10 with a rubber band, and then neatly place it in a packing crate (the shoe box). The first team to do this is the winner.
5. Model the activity and then have the students perform the activity several times, making changes as needed to become more efficient. Discuss potential impacts on people and the environment that might limit possible solutions. After clean-up, discuss how cooperation and competition were involved in the activity. Was competition a useful tool? How about cooperation? How did competition and cooperation affect quality?
Asparagus

Encourage students to explore asparagus production in California.

Activity
Asparagus is one of the few perennial vegetables grown in California. As a perennial, asparagus plants will produce spears year after year. Asparagus has a short 90-day growing season and is primarily grown in California’s Central Valley, Salinas Valley, and the Delta. California asparagus can be purchased at grocery stores, farmers markets, and produce stands in different sizes based on diameter: very small (less than \( \frac{3}{16} \) in.), small (\( \frac{3}{16} \) to \( \frac{5}{16} \) in.), medium (\( \frac{5}{16} \) to \( \frac{11}{16} \) in.), large (\( \frac{11}{16} \) to \( \frac{14}{16} \) in.), and very large (\( \frac{14}{16} \) in. and larger). The asparagus plant produces all sizes all season long. Contrary to popular belief, the thicker spears are more tender. Tenderness also relates to color—the more green, the more tender. The following activity will introduce students to the size scale used to sort asparagus prior to shipping it in the grocery store.

Measuring Asparagus
1. Have students research the origin of asparagus and identify its growing region on a map of California.

2. When harvested, asparagus is measured one inch above the bottom of the stem. Collect various sizes of fresh asparagus, or download and print copies of the measuring worksheet.

3. Measure the asparagus both in standard and metric systems. Practice converting between larger and smaller units.

4. Determine the diameter, circumference, radius and estimate the volume of each asparagus spear. Identify if the size is very small, small, medium, large, or very large.

5. Have students create an infographic to represent their findings.

Classroom Activities

Science
- Compare and contrast the appearance, growing methods, and market for white and green asparagus. Display the information in a graphic organizer.

English Language Arts
- Learn about the history of asparagus production, investigating where it was first cultivated and how it arrived in California. Use online tools to create a digital timeline. Share your timeline in an oral presentation.
- Identify and learn more about the costs and benefits of asparagus production. Write a market report that include predictions for future production and value. Cite evidence to support your predictions.

Materials
- California-grown asparagus in various sizes or measuring worksheet from LearnAboutAg.org/agbites
- California map
- Ruler

Tip
Ask a local produce specialist to be a guest speaker and talk to the students about asparagus.

California Standards

Grade 4
ELA CC: RI.4.3; SL.4.4, 5
Math CC: 4.MD.1, 4

Grade 5
ELA CC: RI.5.3; SL.5.4, 5
Math CC: 5.MD.1, 2, 5

Grade 6
ELA CC: RI.6.1; SL.6.4, 5
Math CC: 6.G.1, 2
Asparagus Measuring Worksheet

Assume each spear was cut one inch from the bottom.

Diameter_______
Radius _______
Circumference_______
Size_______

Diameter_______
Radius _______
Circumference_______
Size_______

Diameter_______
Radius _______
Circumference_______
Size_______

Diameter_______
Radius _______
Circumference_______
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Diameter_______
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Diameter_______
Radius _______
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