Florida BELL PEPPER

Meet Your Farmer

Plenty of peppers are grown all over Florida. This high-yielding crop is easy to grow and produces for several months. Visit the University of Florida IFAS Extension webpage link below to learn how to grow peppers with your class.

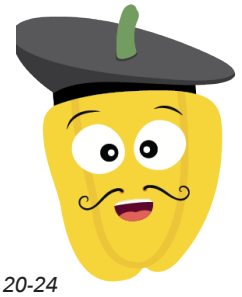
For more resources, visit these websites:

Florida Farm to School
FDACS.gov/FarmtoSchool

University of Florida IFAS:
GardeningSolutions.IFAS.UFL.edu

Dear Teacher,

Peter picked a peck of pickled… you guessed it - PEPPERS! From the super sweet bell to the surprisingly spicy habanero, there's a pepper to match all taste buds. Fresh peppers add color to salads and sandwiches, while roasted peppers add flavor to soups, dips and your favorite sauce. Peppers come in a variety of shapes and colors, so visit your local farmers market today to explore these Florida fruits with your class!



Classroom Recipe

Florida Food Art Octopus *Serves 20-24*

INGREDIENTS:

- 4-5 Florida bell peppers, 1 pepper per five students
- 2 cups pre-made hummus
- 2 sliced black olives

PREP:

1. Slice off the top of one green pepper. Remove the seeds and trim off the white membrane.
2. Repeat with the extra peppers and cut them into strips or "tentacles" for dipping.
3. Spread a layer of hummus on a plate and put the whole pepper upside down on the hummus bed. Attach black olive slices to the pepper body with extra hummus to make the "eyes."
4. Place the extra strips of pepper around the octopus sticking up like tentacles. Show your class your artistic creation and serve them a sample of hummus dip and bell peppers.

Source: superhealthykids.com

This institution is an equal opportunity provider.

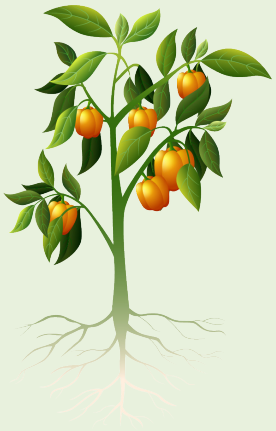
Harvest of the Month

Middle School

Class Chatter

Did You Know?

- Florida bell peppers are available from October through June.
- Peppers are considered a fruit because they belong to the family of flowering plants that produce seeds.
- Most green peppers are actually premature red, yellow or orange bell peppers. All young pepper fruits start out green and will change color as they ripen on the vine.
- Florida bell peppers are packed with vitamins, minerals and antioxidants. Yellow bell peppers are one of the richest dietary sources of vitamin C.
- Because bell peppers are mostly water, they provide very few calories.



Tasty Tips

- When buying peppers, look for firm, shiny and smooth peppers that appear fresh.
- Fresh is best! Store bell peppers in a plastic bag in the refrigerator crisper drawer for up to one week. Bell peppers that have been sliced can be frozen.
- Try roasting bell peppers under high heat in the oven to help bring out their sweetness.

Florida Harvest of the Month

All About Serving Size

The size of the serving on the food package influences the number of calories and all the nutrient amounts listed on the top part of the label. Pay careful attention to how many servings there are in the food package and ask yourself, "How many servings am I consuming?"

Nutrition Facts

Serving Size: 1 medium red bell pepper

Amount Per Serving	
Calories 37	Calories from Fat 0
	% Daily Value*
Total Fat 0g	**0%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 17mg	**1%**
Total Carbohydrate 7g	**6%**
Dietary Fiber 2g	**15%**
Sugars 5g	
Protein 1g	
Vitamin A 27% •	Vitamin C 203%
Calcium 1% •	Iron 3%

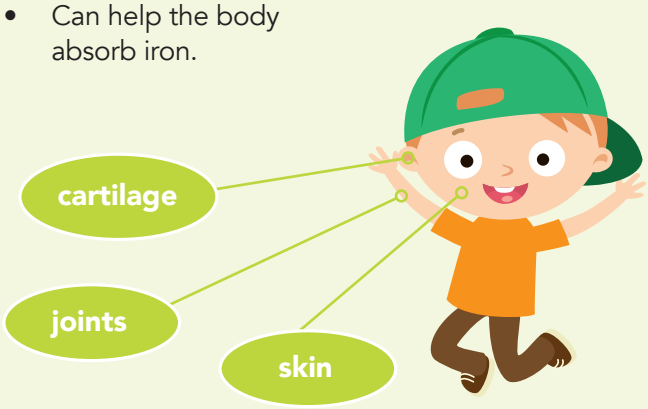
*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

Good for Your Body

Help protect yourself against infection and boost your immunity by including more foods rich in vitamin C in your diet.

Vitamin C:

- Plays a critical role in supporting the body's immune system.
- Is essential for the growth and repair of body tissues.
- Produces collagen which makes healthy cartilage, joints, skin and blood vessels.
- Can help the body absorb iron.



The Prep on Peppers

Bell peppers, a variety of sweet pepper, are a warm-season crop that is a member of the Solanaceae family. Peppers are native to Mexico, Central and South America. In 1493, bell pepper seeds were taken back to Spain by explorers and cultivated across Europe, Africa and Asia.

China currently dominates bell pepper production, followed by Mexico, Indonesia, Turkey and Spain. The United States ranks 6th in worldwide production of bell peppers. Florida bell peppers account for most of the U.S. supply from October to June and rank second in production across the nation.

Pepper Rainbow

Bell peppers come in a variety of colors. The most common colors sold at local farmers markets or grocery stores are green, yellow, orange and red. But there are also brown, white and even purple varieties of bell peppers. Immature peppers that have not fully ripened are typically green in color. As the pepper ripens, the color changes based on the sugar content of the fruit. As a bell pepper matures it will eventually become a certain color based on the type of cultivar or variety.

For example, Red Knight and Big Bertha peppers are red when fully mature, whereas an Orange Bell Pepper will ripen to a deep, dark orange color. Orange and red bell peppers have the sweetest flavor of all the colors.

Discover all the different types of peppers available from:

- Johnny's Selected Seeds
- Bonnie Plants
- Southern Seed Exposure Seed Exchange

Other Facts

- Peppers are botanically classified as a fruit, just like the tomato.
- According to the Guinness Records, the Carolina Reaper is the World's Hottest Pepper. This pepper is a cross between a Ghost Pepper, which previously held this prestigious title, and a red habanero.
- Capsaicin is the chemical responsible for the spiciness of a pepper. The Scoville unit is a measure of the "hotness" of a chili pepper. Bell peppers are a sweet pepper and have zero Scoville heat units.

Carolina Reaper Pepper

Anatomy of a Pepper Flower

Peppers are a versatile productive plant to grow in any school or home garden. Visit Bonnie Plants and the University of Florida IFAS Extension resource page to learn about growing vastly popular pepper plants.

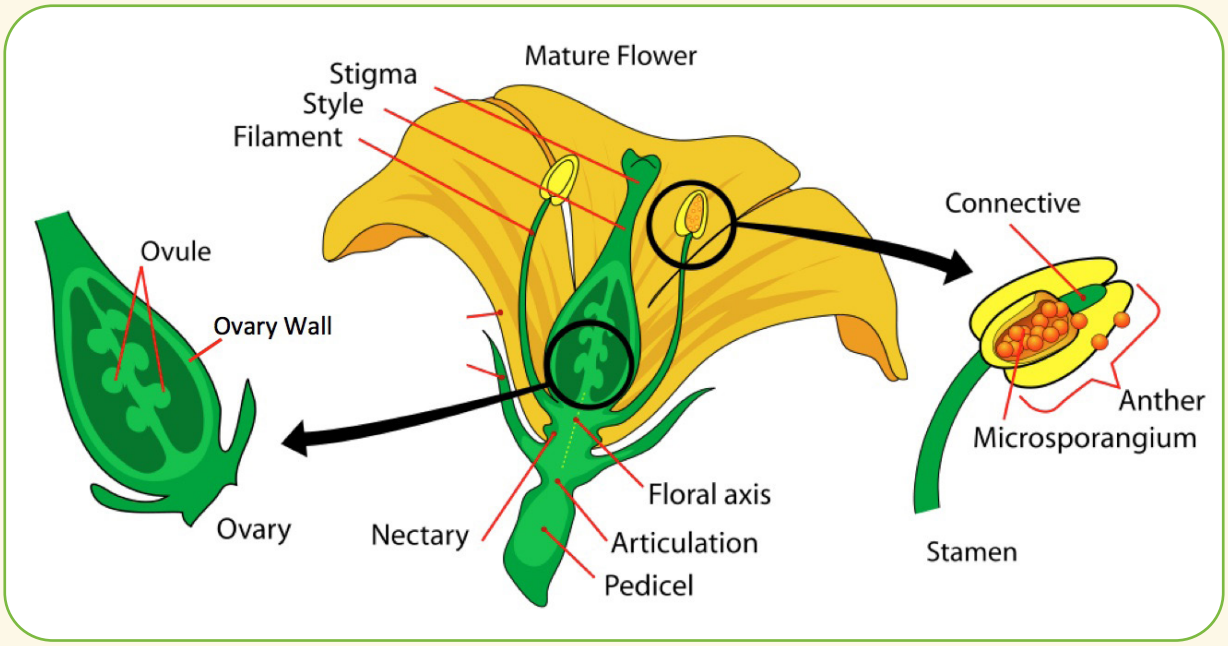


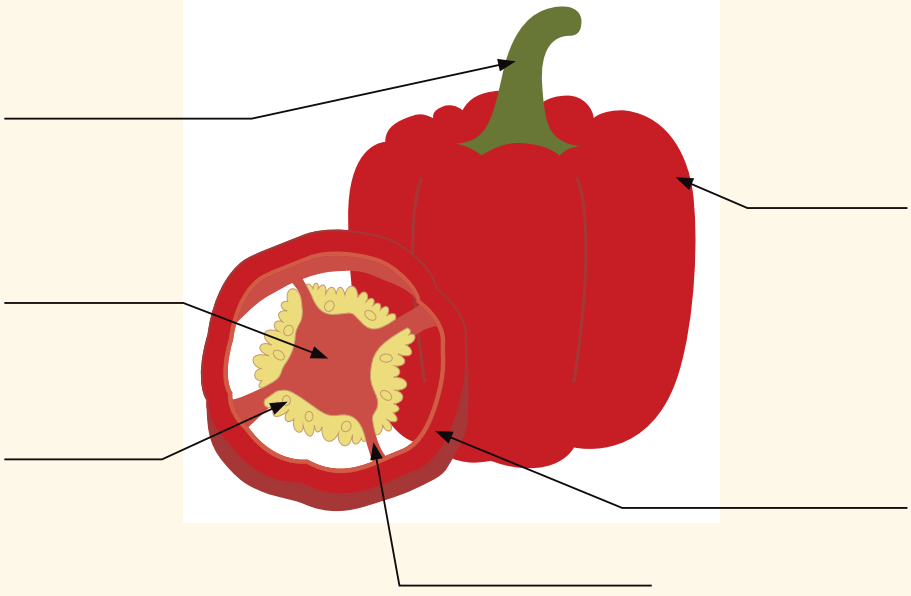
Image credit: www.motherofahubbard.com
Adapted from Wikimedia Commons

Anatomy of a Pepper

Label the parts of a pepper using the word bank below.

WORD BANK

- Seeds
- Exocarp (Skin)
- Membrane
- Septum
- Stem
- Flesh

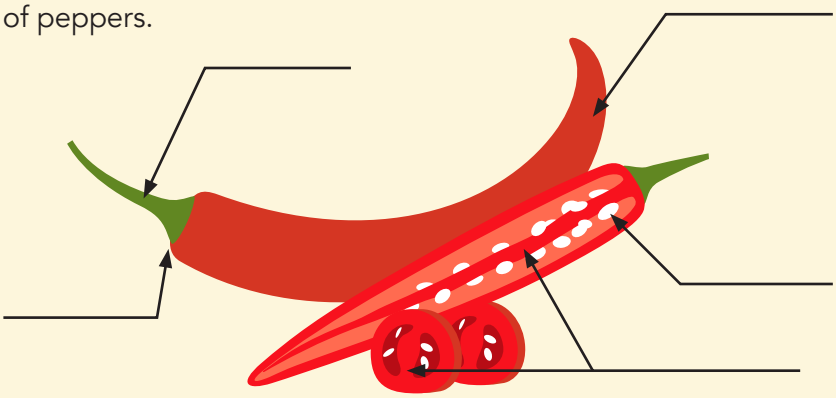


Anatomy of a Chili Pepper

Chili peppers are another type of pepper, and are much spicier than bell peppers. Compare the anatomy of the two types of peppers.

WORD BANK

Stem	Veins
Seeds	Skin
Calyx	



Science, Technology, Engineering and Math Connection

Plant Breeding Peppers

Vegetable horticulturists at the University of Florida IFAS research centers are at the forefront of breeding new plant varieties that are more resilient to Florida's climate and pest pressures. Encourage your students to learn about traditional plant breeding techniques by reviewing basic plant genetics. Most bell peppers are hybrid varieties that are generated by crossing two different parent plants. Discuss the challenges that pepper farmers might face and what plant characteristics would be beneficial to introduce.

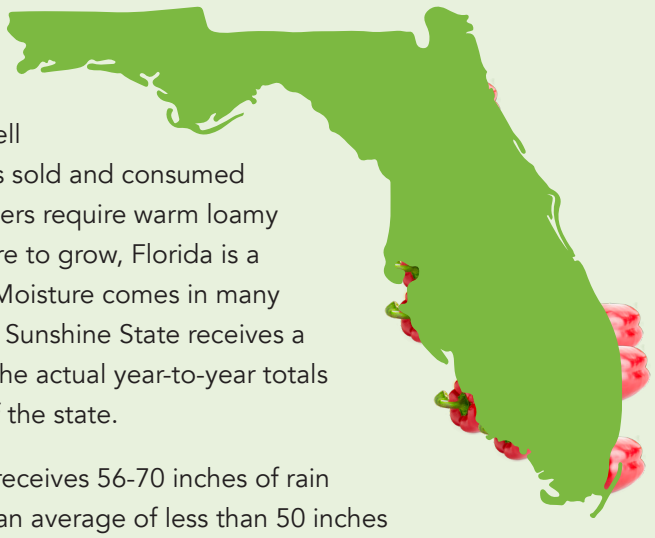
Working in teams, students will design a new pepper cultivar and create a presentation to promote their new super pepper plant to Florida growers. Students will research the different pests and diseases plagued by Florida vegetable growers and create a designer pepper to combat these issues.

Plant Breeding Lab

Encourage your students to utilize the following resources to research plant breeding techniques and how to grow peppers in Florida:

- University of Florida/IFAS EDIS Publications – Peppers
- Vegetable Variety Testing Program - SWFREC
- Peppers – UF/IFAS Gardening Solutions
- Bonnie Plants - Growing Peppers
- University of Florida/IFAS Plant Breeding Program

Perfectly Planted Peppers



While California leads the nation in overall production of bell peppers, Florida growers produce most of the bell peppers sold and consumed in the United States from October to June. Since bell peppers require warm loamy soil, moderate temperatures, full sun and adequate moisture to grow, Florida is a great place to grow peppers during the late fall to spring. Moisture comes in many forms, but in Florida the most common form is rainfall. The Sunshine State receives a yearly average of nearly 54 inches of precipitation though the actual year-to-year totals vary between the northern, central and southern regions of the state.

For example, the wettest part of the state, the Panhandle, receives 56-70 inches of rain annually while the driest region, the Florida Keys, receives an average of less than 50 inches of rain. Growing regions in the Panhandle have two distinct wet seasons: one in the winter due to frontal passages and the rainy season that it shares with the rest of the state--the summer. This means that during the winter months, most of the panhandle counties receive rainfall that sustains the production of winter crops.

Because of the soil and precipitation conditions needed to grow bell peppers, this crop is grown in a few main regions across the state. Some of the most productive counties in Florida for bell peppers are:

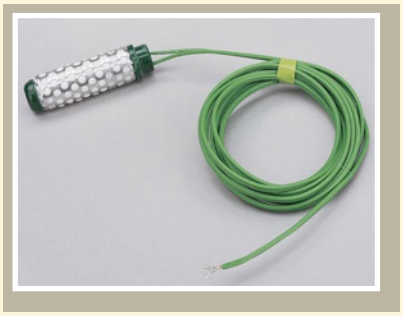
Palm Beach, Hendry, Collier and Manatee counties, as well as Alachua, Dade, Hardee, Hillsborough, Lee, Martin, Putnam, Sumter and Suwannee

Bell Pepper Farm in Florida

Below is a table of the total monthly average rainfall observed during the bell pepper season for Collier, Hendry, Manatee and Palm Beach.

County	Nov	Dec	Jan	Feb	Mar	Apr	May
Collier	2.09	1.71	2.06	2.32	2.25	2.29	3.35
Hendry	2.20	1.83	2.04	2.28	3.32	2.31	3.60
Manatee	2.22	2.50	2.83	2.55	3.99	2.15	2.50
Palm Beach	2.67	1.90	2.15	2.39	4.12	2.62	3.86

Precipitation is defined as water released from the clouds and is one of the main components of the water cycle. Rain is the most common form of precipitation, but hail, sleet and snow are also forms of precipitation. Rain is typically measured using an automated or manual rain gauge. The liquid falls into an opening and is funneled into either a collection container that will be checked by an observer or to a mechanism that allows the quantity of rain to be measured without being collected.



Precipitation has a significant impact on crop growth and agricultural productivity as it provides moisture to the soil. Moisture in the soil is essential to maintain the balance and function of this biological ecosystem as many different organisms, including plants, animals that live in the soil and bacteria, rely on soil moisture to survive. Nutrients are dissolved in the water contained in soil, making these vital nutrients available to plants. Without moisture in the soil, plants would not be able to obtain the macro and micro nutrients required to grow and produce fruits and vegetables.

Using what you've just learned about how precipitation affects crop production, let's explore the possibility of growing peppers in your school garden.

Use the WeatherSTEM station in your county to explore some different weather variables. To find the closest WeatherSTEM station to you, use the link below, but replace 'your-county-name' with the name of the county where your school is located:

https://your-county-name.weatherstem.com

(For example, if your school is located in Leon County, visit https://leon.weatherstem.com)

Select an available WeatherSTEM station in your county and write down the current values for:

CURRENT TEMPERATURE		**˚F**
LOW TEMPERATURE FOR THE DAY		**˚F**
HIGH TEMPERATURE FOR THE DAY		**˚F**
RAINFALL (LAST 24 HOURS)		**"**

Using the data mining tool on the website, go back and look at the rainfall data for the last two weeks (14 days).

To do this:

1. Click on and select "Rain Gauge".
2. Scroll down to the bottom of the page, select the time period from the calendar.
3. Make sure that "Chart" is selected as the output format.
4. Set the interval to "Minute" and select "Data Point" as the operation.

Write the highest rainfall amounts you see on the graph on a sheet of paper. Click on the graph and a pop-up should appear with a picture from the WeatherSTEM cloud camera, and radar and satellite images. What can you say about the weather on the day you selected?

Activity #1

Look at the rainfall and soil moisture data from the same time period. If your WeatherSTEM location does not report soil moisture, you can choose one of the following WeatherSTEM locations that maintains a garden station:

- Baker County: Baker County High School
- Bay County: Deane Bozeman School
- Duval County: Mayport Coastal Sciences Middle School
- Escambia County: University of West Florida
- Escambia County: West Florida High School
- Franklin County: FSU Coastal and Marine Lab
- Hamilton County: Hamilton County High School
- Highlands County: Lake Placid Elementary School
- Hillsborough County: Florida Learning Garden
- Holmes County: Holmes County High School
- Jefferson County: Jefferson County Middle/High School
- Leon County: Lincoln High School
- Leon County: Success Academy
- Leon County : Tallahassee Nurseries
- Madison County: Madison County High School
- Marion County: West Port High School
- Martin County: South Fork High School

Use the same steps listed to plot the rainfall data and add the soil moisture data to the graph.

Answer the following questions:

1. What are some of the things you first notice about the data on the graph?
2. Why do you think this is the case?
3. How did you come to these conclusions?
4. Do you see any period of time that stand out as the lowest values?

Activity #2

Compare data from a station outside of the state of Florida. Follow the same steps above and the graph will show rainfall and soil moisture from two different WeatherSTEM stations. Find a partner to discuss the two graphs and answer the following questions:

1. Why would the values be different between the two locations?
2. How can the location and local weather impact these observations?

Additional Resources: Explore these other WeatherSTEM lessons

weatherstem.com/resources