



FLORIDA GREEN BEAN



SPECIAL NEWS

Plan a winter harvest event before the holiday break. Connect with your school food service department to bring the school garden produce into the cafeteria. Seasonal recipes can be supplemented with fresh herbs and garnish from the garden. Classroom tasting parties are a great way to allow students to taste the fruits of their labor.

Florida Farm to School:
FarmToSchoolFL.com

National Farm to School Network:
www.FarmToSchool.org



DEAR TEACHER

This month's Harvest of the Month product is the savory green bean. Green beans are a popular plant for Florida which are easy to grow even in poor soil. They grow on a bush that is able to stand unsupported, unlike pole beans. Let's learn more about this Florida produce!

CLASSROOM RECIPE

FRESH GREEN BEANS WITH GARDEN DILL DIP



Serves 20-25

INGREDIENTS:

- Florida green beans
- 1 cup plain low-fat yogurt
- Lemon juice
- 1 tablespoon fresh dill, chopped
- 1 tablespoon crumbled feta cheese

PREPARATION:

1. Snap the ends off the green beans and rinse in cool, running water.
2. Stir together the yogurt, fresh dill and feta cheese.
3. Serve a sample of the dip and raw green beans to your students.

This institution is an equal opportunity provider.



CLASS CHATTER

DID YOU KNOW?

- Green beans are a great source of potassium, which helps to control blood pressure.
- To get the best flavor out of green beans, do not overcook them.
- Green beans are predominantly grown in Alachua, Dade, Hendry and Palm Beach counties.
- Florida ranks first nationally in the production, acreage and total value of fresh market green beans.
- The most common varieties in Florida are bush beans and pole beans.
- Green beans are a member of the legume family.
- Before tasting, do the “snap check” to make sure the green beans are fresh. The bean should crisply snap!
- Green beans originated in Peru and were spread throughout the Americas by the Native Americans.

GREEN BEAN TIPS

- Florida green beans’ peak season lasts from November to May.
- When planting green beans, use seeds instead of transplants.
- Be careful when weeding around green beans because green bean plants have weak root systems.
- When planting, remember that pole bean seeds require more spacing in the soil than bush bean seeds.

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: 10 snap beans, 4 in. long

Amount Per Serving		
Calories 17		Calories from Fat 0
		% Daily Value*
Total Fat 0g		
Saturated Fat 0g		0%
Trans Fat 0g		0%
Cholesterol 0mg		
Sodium 3mg		
Total Carbohydrate 4g		3%
Dietary Fiber 1g		6%
Sugars 2g		
Protein 1g		
Vitamin A	3%	Vitamin C 9%
Calcium	2%	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.

ADDITIONAL RESOURCES

Check out these additional resources:

- [Green Beans](#)
- [UF/IFAS](#)
- [Phaseolus Vulgaris](#)

Informational Books and Articles

- “Animal Farm” book by George Orwell
- “Green Beans are Magically Easy” article by Jodi Torpey, Denver Post
- Florida BMPs Program Racks up More Successes” article by Kelly Morgan, www.growingproduce.com



LESSON PLANS

CONTENT AREAS: Lessons are most applicable for science and environmental science courses but the content includes standards from social studies, art, language arts and especially math.

STANDARDS: SC.6.N.1.5, SC.6.N.1.3, SC.7.N.1.5, SC.7.L.1.7.2, SC.7.L.17.3, SC.8.N.1.5, LAFS.6.SL.1.2, LAFS.6.SL.1.3, LAFS.6.SL.2.4, LAFS.68.RST.I.1, LAFS.68.RST.I.2, LAFS.68.WHST.2.6, LAFS.68.WHST.3.7, MAFS.7.SP.2.4, VA.68.C.2.1, VA.68.C.2.2, VA.68.C.2.3, SS.7.C.2.12, SS.7.C.2.13 and SS.7.C.2.14

OBJECTIVE: Students will calculate the number of green beans lined end-to-end it would take to circle the state of Florida. Students will complete a lab to determine which variables have the strongest effect on seed germination-light, temperature, moisture and/or medium of germination.

MATERIALS:

- For Lesson: Newspaper article, “Green Beans are Magically Easy,” one bag of Florida green beans, blank Florida map and class set of rulers.
- For Project: Small bag of green bean seeds, 10 petri dishes, compost, sand, peat moss, paper towels, small beaker that measures in mL, water and a thermometer.

INTRODUCTION: Post the following warm-up problem to begin the discussion on green beans:

“Certain varieties of green bean vines can grow as much as 8cm a day. What would be the approximate age, in days, of green bean vine that is 240cm long?” Answer: $240\text{cm} / 8 \text{ cm per day} = 30 \text{ days}$

Allow students five minutes to answer the warm-up problem. Review as a class. Poll the classroom to see how many students have tried green beans before. How many have grown them?

GUIDED ACTIVITY: Students will read “Green Beans History and Facts” and research more facts on green beans. Encourage students to share what they learn.

Next, students will read the newspaper article “Green Beans are Magically Easy” independently. Finally, students will complete the comprehension questions in small groups. After they have completed the reading and follow up questions, place students in groups of three to discuss the text and compare answers. Provide an additional discussion question to each group of three. Each group will have to respond to the question in front of the class.

INDEPENDENT ACTIVITY: Students will work in partners for this math-based activity. First, provide each group with a blank map of Florida. Students will need to find the perimeter of Florida in centimeters, inches, feet, yards and miles. They can either research the mileage or use a map scale to determine the perimeter. Next, students will measure the length of 3 different green beans and calculate the average length of a green bean. Using this average, they will determine how many green beans it would take lined end-to-end to circle the state of Florida.

ADDITIONAL EXERCISE

Check out this month’s Garden Activity for a fun project. Challenge your class to a Bean Race!

FDACS.gov/HarvestoftheMonth



BACKGROUND INFORMATION

Green beans are low in calories, sodium and fat. They contain fiber and many important nutrients, such as vitamin C, folate and potassium. You can enjoy this vegetable raw, steamed, grilled, broiled or sauteed.

There are many different bean varieties. An organization known as Seed Savers Exchange, has over 40,000 different bean types and they do not even possess them all!

The green bean originated in South and Central America. The earliest records of green beans were found in Peru.

Green beans are in the same family as kidney beans, black beans and pinto beans.

Florida's green bean crop contributes 44% of the U.S. total in terms of production and 27.4% in terms of cash receipts. Florida produces 100% of the fresh market green beans grown in the United States during the winter months.

For more on these facts and additional information, please visit these sources:

- <http://edis.ifas.ufl.edu/pi032> Wael M. Elwakil and Mark A. Mossler
- www.motherearthnews.com Weaver, W. 2011
- www.whfoods.com

Florida snap beans are primarily grown in the following counties:



CYCLE OF A GREEN BEAN

WORD BANK

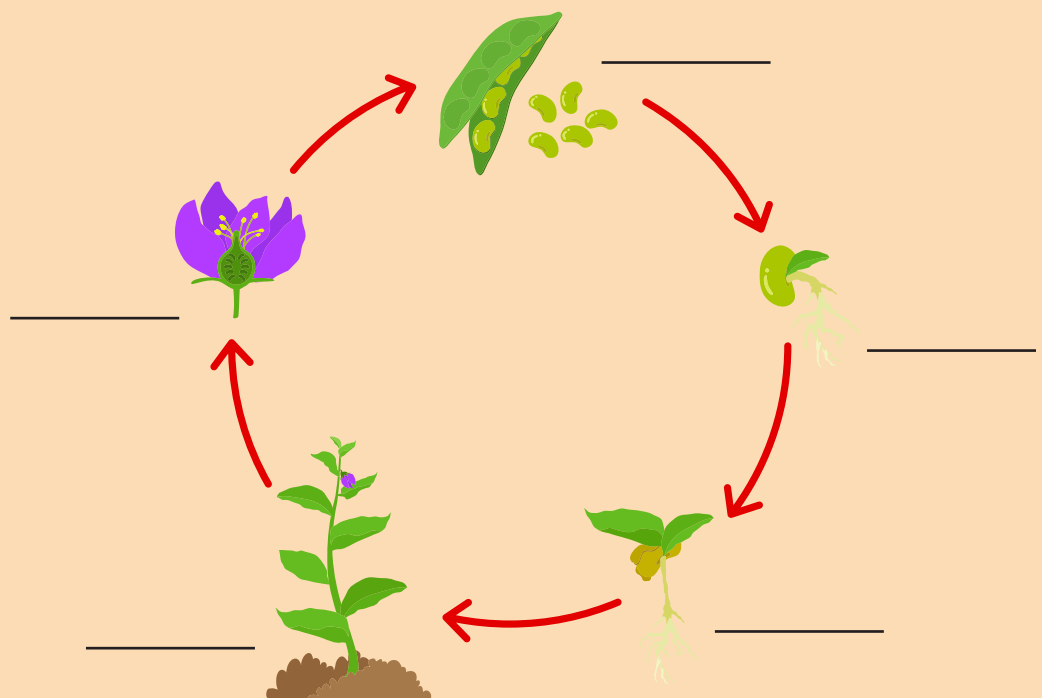
Seeds

Flower

Seedling

Adult Plant

Cotyledon



GREEN BEANS ARE MAGICALLY EASY

By Jodi Torpey

Joan Hinkemeyer is as crazy about green beans as some gardeners are for homegrown tomatoes. The Denver gardener says nothing compares to the taste of a freshly picked green bean. "They're better than a chocolate brownie any day." Hinkemeyer thinks a bean seed was the first veggie she planted in her family's garden. "My family grew everything we ate," she says. "I probably planted my first bean when I was 3." Beans are the perfect vegetable to get children interested in gardening, she says. "The seeds are large enough for a child to grasp and put in the soil." In addition, beans are some of the easiest vegetables to grow.

Two of Hinkemeyer's favorite green bean varieties are "Provider" and "Foremost" because they mature in 53 days. "With our short growing season, we need to take advantage of every single day," she says. Here are some tips for growing beans by the bushel: Green beans, sometimes called green beans or string beans, are grown either as bush beans or pole beans. Bush beans grow on upright plants, and some are compact enough to grow in large containers. Pole beans grow on climbing vines that require staking on three-pole teepees or trellises. Pole beans are perfect for those lacking garden space or who prefer to do their harvesting while standing.

There's a bean for nearly every taste, from rounded pods to flat-podded Italian beans to French filet beans called haricot verts. Beans come in colors, from yellow wax beans to purple, red and streaked beans. Two popular varieties of bush beans are bush "Kentucky Wonder" and "Derby." Familiar pole bean varieties include the heirloom "Kentucky Wonder" and "Blue Lake."

Select a garden spot that gets at least 6 hours of sun a day. Amend the soil with high-quality compost so it is well-drained. Julissa Garcia, a fourth-grader at Alsup Elementary School in Commerce City, helps stock fresh green beans at a youth farmers market. It was the second such farmers market event to be held this year at the school, which is participating in a wellness program sponsored led by Commerce City-based nonprofit Partnerships for Healthy Communities. Students, teachers and community members were offered a variety of locally grown fresh fruits and vegetables, including everything from watermelon and apples to squash and eggplant.

Plant beans after the last frost date, when the soil has warmed to about 50 degrees and nighttime temperatures are above 55 degrees. Plant seeds 1/2 to 1 inch deep. Plant successive crops, every two weeks, until early August, to guarantee a fresh crop throughout the season. Plant bush beans in rows 12-18 inches apart, with 3 to 4 inches between plants.

Put the trellis or support up before planting pole beans. Then plant them 4 to 6 inches apart in rows 30 inches apart or in hills (4 to 6 seeds per hill) 30 inches apart. Add minimal amounts of fertilizer; beans are legumes and can produce their own nitrogen. Keep seeds and plants moderately moist; beans dislike soggy soil. Mulch lightly when the seedlings are about 6 inches tall. Check your beans each day when it's close to harvest time and pick at regular intervals to keep the plants productive. Avoid harvesting beans when plants are wet to avoid spreading foliage disease. Harvest when the bean pods are firm and several inches long, but before the seeds inside are fully developed.

Use scissors to cut off pods to avoid breaking the stems or branches on the plant. Freezing is the easiest way to preserve the summer-fresh flavor of green beans. Pick green beans in their prime. Wash, trim the ends and cut into smaller pieces. Blanch beans in boiling water for three minutes. Cool beans immediately in ice water for three minutes; drain. Place beans in plastic freezer bags and freeze.

To find this story online visit: www.denverpost.com



COMPREHENSION QUESTIONS

Directions: After reading the article “Green Beans are Magically Easy,” answer the following questions on your own sheet of paper.

1. What reasons does the author cite to support her claim that beans are the perfect vegetable to engage children in gardening?
2. Why does the author recommend planting beans that mature quickly in Denver, Colorado?
3. How do the bush beans differ from pole beans in how they are grown?
4. Why does the author recommend NOT planting all your beans at once or the same time?
5. Why is it NOT necessary to add a lot of fertilizer to beans to help them grow?
6. Using the information from the article as a guide, create a plan for growing bush or pole beans at your school. Your plan should include the following:
 - Type of bean (bush or pole) and why you selected one over the other.
 - Location on your school campus where you will plant them and why you choose that location.
 - Medium in which they will be grown (pots or garden bed) and why.
 - Time of year in which they will be planted.
 - How you will prepare and eat them.

TYPE:

LOCATION:

MEDIUM:

TIME:

HOW YOU WILL PREPARE AND EAT THEM?

GREEN BEAN GERMINATION LAB

Background Information:

Seeds remain dormant or inactive until conditions are right for germination, the sprouting of a seed into a plant. All seeds need water, oxygen and proper temperature for germination to occur. Some seeds also need specific amounts of sunlight. Some seeds germinate better in full light, while others require darkness to germinate.

Goal:

In this lab you will determine which variables have the strongest effect on green bean seed germination. The variables tested in this lab are light, temperature, moisture and/or medium (condition) of germination.

Materials Needed:

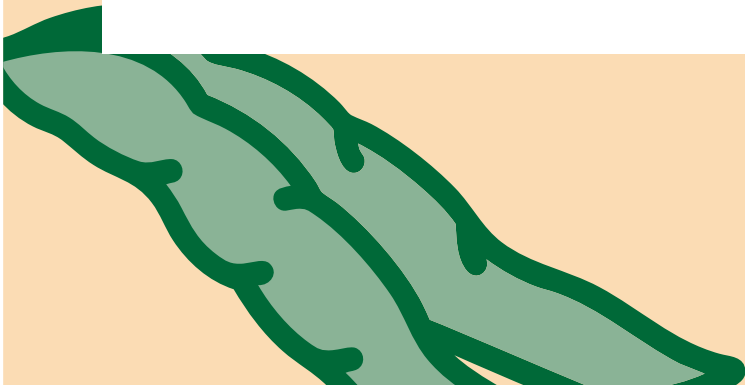
Small bag of green bean seeds, 20 petri dishes, compost, sand, peat moss, paper towels, small beaker that measures in mL, water and thermometer.

Method:

Divide students into 4 groups of 5 (two groups will monitor the conditions in sunlight and two in darkness). Each student in a group will be responsible for monitoring one of the five conditions.

Each group, regardless of condition, will complete instructions B-D.

- a. Fill one petri dish with compost, one with sand, one with peat moss, one with a paper towel and leave one petri dish empty.
- b. Place one green bean seed one centimeter into each petri dish. For the petri dishes with a paper towel, fold the paper towel over the green bean.
- c. Pour 10 mL of water on top of each petri dish except the petri dishes without a growth medium.
- d. Two groups will place one of each petri dish in an area where they will receive at least 6 hours of daylight. The remaining two groups will place their petri dishes in area that receives little to no sunlight (such as a closet or drawer).
- e. Complete an initial observation by recording the date, time and temperature on the appropriate table provided. Each group member should observe all 5 growth mediums.
- f. Check the seeds each day, record the temperature and note whether they have germinated or not. Only add water if the petri dish appears dry.



GREEN BEAN GERMINATION LAB

Seeds in Sunlight

Growth Medium	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Compost	Date:	Date:	Date:	Date:	Date:	Date:
	Time:	Time:	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:	Temp:	Temp:
	Germ:	Germ:	Germ:	Germ:	Germ:	Germ:
Sand	Date:	Date:	Date:	Date:	Date:	Date:
	Time:	Time:	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:	Temp:	Temp:
	Germ:	Germ:	Germ:	Germ:	Germ:	Germ:
Peat Moss	Date:	Date:	Date:	Date:	Date:	Date:
	Time:	Time:	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:	Temp:	Temp:
	Germ:	Germ:	Germ:	Germ:	Germ:	Germ:
Paper Towel	Date:	Date:	Date:	Date:	Date:	Date:
	Time:	Time:	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:	Temp:	Temp:
	Germ:	Germ:	Germ:	Germ:	Germ:	Germ:
Plain seed NO water	Date:	Date:	Date:	Date:	Date:	Date:
	Time:	Time:	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:	Temp:	Temp:
	Germ:	Germ:	Germ:	Germ:	Germ:	Germ:

GREEN BEAN GERMINATION LAB

Seeds in Darkness

Growth Medium	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Compost	Date:	Date:	Date:	Date:	Date:	Date:
	Time:	Time:	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:	Temp:	Temp:
	Germ:	Germ:	Germ:	Germ:	Germ:	Germ:
Sand	Date:	Date:	Date:	Date:	Date:	Date:
	Time:	Time:	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:	Temp:	Temp:
	Germ:	Germ:	Germ:	Germ:	Germ:	Germ:
Peat Moss	Date:	Date:	Date:	Date:	Date:	Date:
	Time:	Time:	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:	Temp:	Temp:
	Germ:	Germ:	Germ:	Germ:	Germ:	Germ:
Paper Towel	Date:	Date:	Date:	Date:	Date:	Date:
	Time:	Time:	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:	Temp:	Temp:
	Germ:	Germ:	Germ:	Germ:	Germ:	Germ:
Plain seed NO water	Date:	Date:	Date:	Date:	Date:	Date:
	Time:	Time:	Time:	Time:	Time:	Time:
	Temp:	Temp:	Temp:	Temp:	Temp:	Temp:
	Germ:	Germ:	Germ:	Germ:	Germ:	Germ:

GREEN BEAN GERMINATION LAB CONCLUSIONS

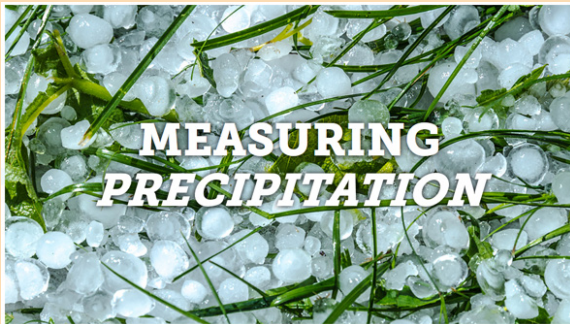
1. Which petri dish was first to germinate?
2. Which petri dish was last to germinate?
3. Which petri dish(es) did not germinate?
4. Was it possible to determine which variable had the greatest effect on whether a seed germinated or not? Explain your answer in detail.
5. What changes would you need to make to the investigation to best determine which variable has the greatest effect on whether a seed will germinate or not?

COMPREHENSION QUESTIONS - ANSWER KEY

1. The beans are easy to handle, plant and grow.
2. Denver has a short growing season.
3. Pole beans need a structure to attach and grow and bush beans can grow without support.
4. So that you don't harvest all the beans at once and have fresh beans for several weeks.
5. Beans attract nitrogen fixing bacteria.

ADDITIONAL RESOURCES

Explore these WeatherSTEM lessons



weatherstem.com/resources



For more resources, please visit:

FarmToSchoolFL.com