

STEM *Sims*™

Plant Growth

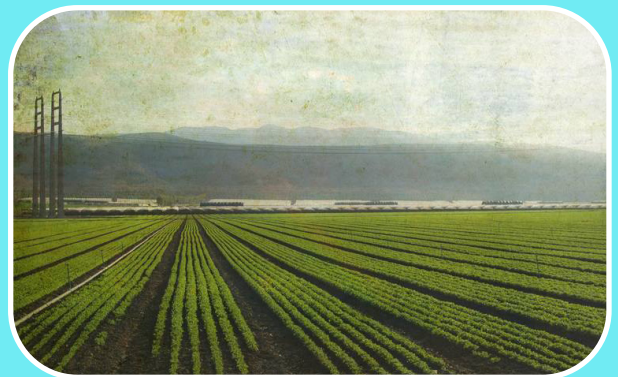


Plant Growth

**Do you need an idea for a scientific study?
Try out one of our ideas or make one of your own.**

Corn, potatoes, carrots, green beans, and a host of other plants provide much of the food for the people of the world. Take the following brief quiz to see how much you already know about plants. See the bottom of page 4 to check your answers.

1. About how tall can some types of bamboo grow in one day?
 - a. 1/2 foot
 - b. 1 foot
 - c. 2 feet
 - d. 3 feet
2. About how many bananas are eaten by people each year?
 - a. 10,000
 - b. 100,000
 - c. 100,000,000
 - d. 100,000,000,000
3. Carrots have been eaten by people since about the 10th century. What color were carrots that were grown during that time?
 - a. orange
 - b. purple
 - c. green
 - d. yellow
4. All the following plants are in the same family of plants as roses *except*:
 - a. peaches.
 - b. potatoes.
 - c. plums.
 - d. apples.
5. What is the only fruit that has seeds on the outside of the fruit?
 - a. strawberries
 - b. blueberries
 - c. blackberries
 - d. huckleberries



Grow, Bean, Grow!

People eat them as whole beans, mashed, and even fried. It's the amazing pinto bean filled with protein, fiber, vitamins, and minerals that people need to remain healthy. One of the most popular beans, the pinto has more fiber than any other bean. Are you ready to find out what makes this bean grow? Get started now.

Materials

6- pinto beans
6- paper towels

6- clear plastic baggies
spray bottle with water

Directions

1. Make sure that you get permission before conducting this experiment.
2. Use caution with the plastic baggies. Small children can suffocate if the bag is misused.
3. Dampen one paper towel with water from the spray bottle.
4. Place the damp paper towel inside one baggie.
5. Place one pinto bean inside the baggie with the damp paper towel.
6. Seal the baggie.
7. Repeat steps 3 – 6 to prepare the other 5 seeds and baggies.
8. Place two of the seeds and baggies in a sunny spot on a windowsill.
9. Place two of the seeds and baggies in a less sunny spot farther away from a window.
10. Place two of the seeds and baggies in the dark, such as a cabinet drawer.
11. Check all the baggies and seeds each day, making sure to keep the paper towel inside the baggie damp.
12. Observe and record in Table 1 your observations of the seeds over a two-week period.
13. After 2 weeks you can move any of the small plants to containers with soil to keep growing your plants.

Seed Location	Observations				
	Day 3	Day 6	Day 9	Day 12	Day 15
Sunny					
Sunny					
Shady					
Shady					
Dark					
Dark					

Questions

1. What do you think this investigation was testing?
2. Why did you place two seeds and baggies in each area? Why not just one seed and baggie?
3. Based on your observations, do plants need light to grow?

Plant Growth

Cycle of Life

In the investigation you conducted with the seeds, you hopefully found out how and when plants need light to grow. But what other things do plants need to be healthy? One of those needed factors is nutrients. And since plants can't move and go to the grocery store to get those nutrients, the plants must absorb them from the ground. And who puts those nutrients in the ground? Decomposers do.

The original recyclers of the world are the decomposers. Decomposers consist of bacteria, fungi, worms, termites, and a host of other organisms. They break down dead plants, animals, and wastes and recycle the matter into useful nutrients needed by plants and other producers.



Both plants and animals are made up of mainly water, carbon, nitrogen, and oxygen. Without decomposers, the carbon and other matter would build up on the planet creating a scene most people would not want to see. Decomposers break the dead matter down into carbon dioxide, nitrogen, phosphorus, and other substances plants need to grow and survive. The nutrients



are absorbed with water through the roots of plants while the carbon dioxide is released into the atmosphere and is eventually extracted and used in the process of photosynthesis.

Fungi are effective decomposers that grow in a similar fashion to plants; however, they cannot photosynthesize and must uptake all food by extracting the nutrients from dead plant and animal matter and wastes. Fungi excrete enzymes that break-down the decaying material and then absorb the nutrients into their structures.

Please visit our site for more helpful information:

STEMsims.com

Answers: Page 2 Answers: 1) d, 2) d, 3) b, 4) b, 5) a. Page 3 Answers: Grow, Beans Grow 1) How light affects plant growth. 2) To conduct a fair test. 3) Seeds can germinate without light and small plants grow rapidly to seek light, but eventually plants need light to grow and be healthy.

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