STEM Sims™

Plant Paint

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

Start learning right now about the wonders of amazing plants. Take the following brief quiz to see how much you already know about plant anatomy. See the bottom of page 4 to check your answers.

1. Bamboo is the world's fastest growing plant. The fastest growing bamboo can grow how much in a single day?
   a. 0.5 foot
   b. 3 feet
   c. 5 feet
   d. 10 feet

2. Which plant is annually most consumed by humans?
   a. apples
   b. pears
   c. bananas
   d. peaches

3. Which is the only fruit to have its mature seeds on the outside of the fruit?
   a. cherries
   b. blueberries
   c. blackberries
   d. strawberries

4. The earth has over 80,000 species of edible plants. Over 90% of the plant food that humans eat comes from about how many of these plants?
   a. 30
   b. 560
   c. 1,590
   d. 14,500

5. Vanilla flavoring comes from which type of flower?
   a. rose
   b. orchid
   c. dandelion
   d. snapdragon

Is the top of a leaf different from the bottom?

Most people go through their days thinking little of just how important plants are to our lives. In this investigation, you'll see if there is a difference between the top and bottom of a leaf. You'll also be asked to ponder the "how come" of if they are different.

Materials Needed

Freshly picked dicot leaf
Clear nail polish
Hand lens or microscope

Procedure

Part I.

1. Apply a thick coat of clear nail polish to about a square inch on the top of a leaf.
2. Allow the polish to completely dry.
3. Apply a thick coat of clear nail polish to about a square inch on the bottom of a leaf.
4. Allow the polish to completely dry.
5. Carefully peel the polish away from the leaf surface. Make sure to keep the polish in one whole piece and to remember which is the top and the bottom piece.
6. Use your hand lens or microscope to closely observe the pieces of hardened nail polish.
7. The structure in the image below that appears as a small black dot is the stomata of a leaf. Stomates are pores that bring the critical gases of carbon dioxide and oxygen into the interior of a leaf. When opened, air moves into the leaf and water vapor escapes to the external environment.
8. Count the number of stomates on the top and bottom of the leaf and record this information in the table below.

Leaf Surface	Number of Stomates
Top	
Bottom	

Questions

1. Were there more stomates on the top or bottom surface of the leaf?

2. Why do you think this difference in stomates was present?

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Run, Forests, Run!

Our forests are being lost at a rate of about 40 football fields every minute. With over a billion people using forests for all or a part of their livelihood, the need to protect forests increases with every day.

About 30% of Earth's land surface is covered with forests. Yet this 30% provides about 25% of our modern medicines, cleans carbon dioxide out of the air while providing us with needed oxygen, reduces the risks from flash flooding, and are home to over 80% of the world's biodiversity.

Cancer drugs, latex gloves, deodorants, fungicides, crayons, helmets, clothing, luggage, sandwich bags, shampoo, guitars, hair dye, and most importantly, toilet paper are all made from forest products. The list of commonly used products made from forest resources is so long that this entire page could not start to contain the complete listing. So, the next time you use one of these products, thank a tree. More importantly, do you part to conserve these resources and get involved in finding ways to protect our forests.

Please visit our site for more helpful information:

STEMsims.com

Answers: Page 2 Answers: 1) b, 2) c, 3) d, 4) a, 5) b. Page 3 is the top of a leaf different from the bottom Answer: The bottom surface of a leaf should have more stomates than the top. This is so when open, water loss from the leaf is reduced since the bottom surface is protected

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