



AGRONOMY 4 ME CELERY ACTIVITY

Water Movement through Xylem Vessels in Celery

Introduction

The vascular tissue system in plants is the transport system made up of two primary specialized tissues: xylem, which carries water from the roots upwards to the leaves of the plant as it is needed for photosynthesis, and phloem, which carries glucose/ manufactured food from the leaves to the rest of the plant. Xylem and phloem arrange themselves in vascular bundles. Cutting a cross-section through stem usually shows the xylem on the inner side of the vascular bundle in a stem, while the phloem is found on the outer side of the vascular bundle.

Purpose

Conduct an experiment in which you observe the location of the xylem tissue within the stalk of celery, thus showing the movement of water through xylem.

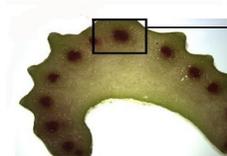
Materials

Plastic knife or scalpel
Celery stick
100ml Beakers/cups
Food Dye
Hand lens/Microscope

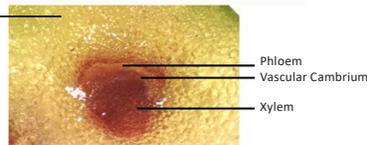
Directions

1. Cut the bottom end of the celery so that it is a neat cut, not jagged and broken.
2. Fill a 100 ml beaker half-full of water and mix in several drops of food coloring until you can no longer see through the water.
3. Place the celery in the water.
4. After 10 minutes, remove the stalk of celery from the water for a moment and look at the bottom. You should see dots that are the color of the food coloring. These are the vascular bundles of xylem, which enable water to move up into the celery.
5. Cut a very thin slice of celery off the bottom of the stalk and replace the celery stalk in the colored water.
6. Cut a cross section through the celery to examine the vascular bundles
7. On a blank sheet of paper, write the names of all of the members of your group and then place your 100ml beaker with your celery on your paper. You will examine your celery tomorrow for changes.
8. Place the thin section of celery on a microscope slide and observe with a hand lens and then in the microscope on low and medium power

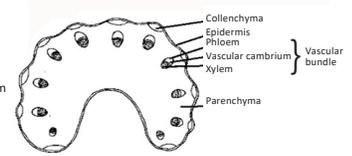
Here is an example of what you would see with a magnifying glass or with a microscope.



Cross section view of celery under microscope (8x)



Magnification of the vascular bundle clearly shows 3 distinct layers, the darkest dyed tissue being xylem (36x)



Conclusions

Xylem vessels run along the _____ of the celery stick stem, while the phloem vessels run along the _____.

Questions

1. Name the tissue that was stained by the dye.
2. What can you conclude regarding the function of xylem tissue?
3. What surprised you about this lab?
4. Summarize what you learned from this lab in 3 complete sentences.