CONSERVATORY OF FLOWERS

GOLDEN GATE PARK · SAN FRANCISCO

Leaf Adaptation Experiment

Too much rain on a leaf can cause it to grow mold, algae, or fungus. When mold grows on a leaf, the plant can't get as much sunlight as it needs and the leaf may rot. Imagine leaving your wet sneakers outside for weeks. They'd probably start getting moldy! Some rain forest plants have a surface that repels water and helps them stay dry. In this experiment we'll compare three leaf surface adaptations - waxy, fuzzy, and uncoated - to see which best repels water.

Supplies

- 8x10 inch piece of wax or parchment paper
- 8x10 inch piece of felt
- 8x10 inch piece of construction paper
- leaf template
- spray bottle with water (water can be dripped from a cup as an alternative)

Discussion Questions

Q: What happens when rain falls on a leaf?
Possible Responses: Water drops roll off. Water drops stay on the leaf.

Q: Is either one an advantage to the plant? Why?
Possible Responses: The leaves stay dry and are therefore not a good host for algae and fungi. When the water rolls off, it may go to the plant's roots.

Q: (Distribute materials to students and ask them to touch surfaces.) Which surface do you think will best repel rainwater? Which will repel rainwater the worst?

Q: How could we test our predictions?
Possible factors to consider include:

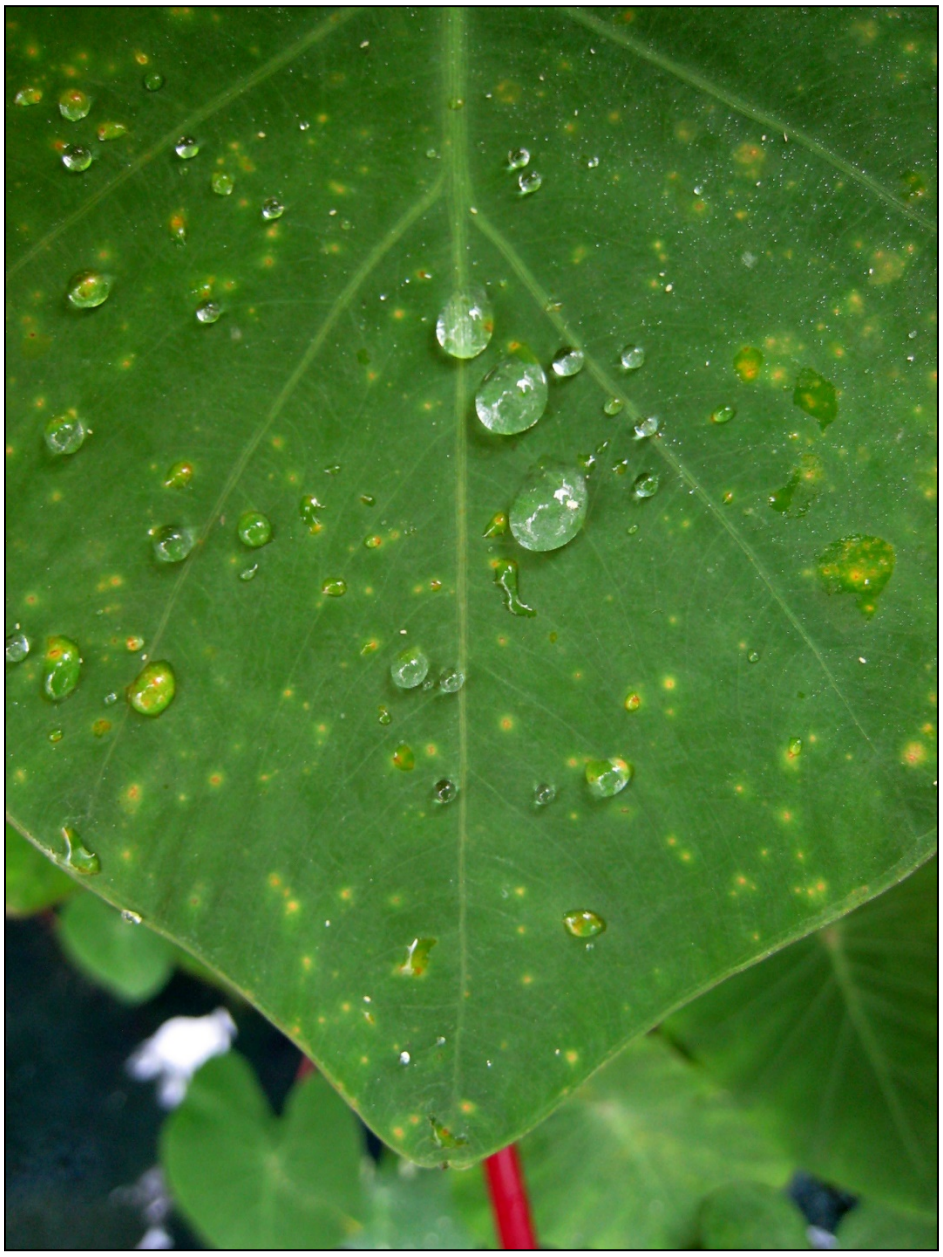
- *the amount of water dripped or sprayed on the leaf;*
- *the amount of time to let the water sit on the leaf;*
- *if all leaves are held at the same angle or placed on flat on a table;*
- *scale to measure results, i.e. 1 to 5, 1 being very wet, 5 being very dry.*

Experiment Directions

1) Using the leaf template, cut three identically shaped leaves, one of wax paper, one of felt, and one of construction paper.

2) Spray or gently drip equal amounts of water on each leaf. Let leaves sit until construction paper leaf begins to absorb water.
3) Lift up each leaf to let water drip off. Do not dry with a towel, as this won't represent what happens in the plant's habitat. Wax paper and felt should be dry with a few droplets on the surface. Construction paper should be wet.
4) Discuss which leaf surface does the best job as a "raincoat" for the plant. How does this compare to the student's predictions?
5) Discuss a real life example. Taro leaves have a coating that repels rain water, which beads and rolls off. Students can see examples of the taro at the Conservatory, or in the photo below.

Taro Leaf Showing Beading Water



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