Rainforest Plants

Humans have been studying rainforests for more than 150 years. Despite this, we have not even identified half of the plants that exist in these incredibly diverse regions. But for all of the diversity, all of the rainforest's plants share similar features that help them survive the conditions of the tropics.

This chapter reviews the different plant types covered in the Plant Characteristics section of the Rainforest Study.

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1. Trees are the most immediately obvious forms of plant life in the rainforest. How does the diversity of trees in tropical rainforests compare with temperate forests?

You can find as many as 300 tree species in a hectare of rainforest, compared with an average of 25 in a temperate rainforest.

2. What factors help to determine the shape of a tree's crown?

The height of the tree and the strata it occupies, which determine how much light it receives.

3a. What is the general shape of the crowns of canopy trees? Why are they shaped like this?

They are wide and shallow. Their leaves spread out as wide as possible to get the greatest amount of light.

b. What shape are the crowns of understory trees? Why is the shape of the crown different from canopy trees?

Conical. In the low light created by the rainforest's canopy, this shape allows understory trees to maximize the amount of light they catch for photosynthesis.

4a. What is a drip tip leaf?

A leaf that ends in a small point.

b. How does this feature help the plant?

Water drops form quickly on the tip, which helps leaves to dry faster. This allows them to get more light and exchange gases, allowing them to photosynthesize more efficiently and also makes them less prone to epiphyll growth.

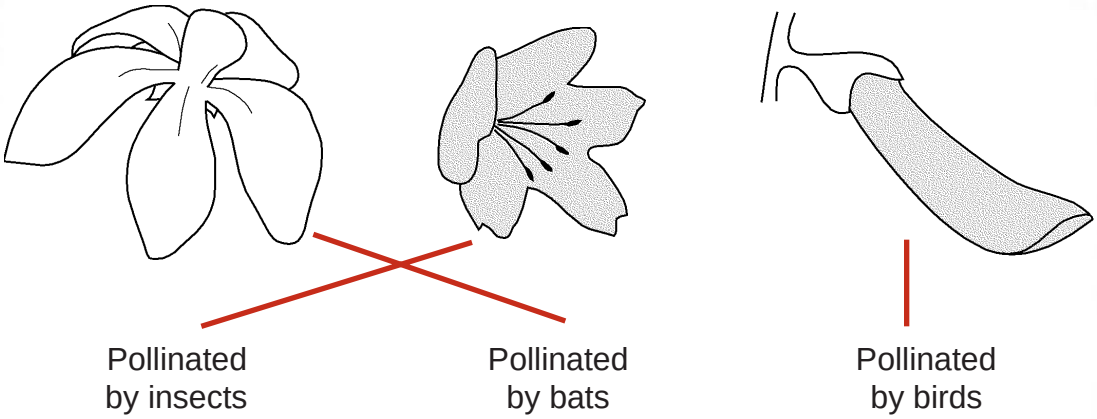
5. How does red or purple coloring on the underside of a leaf aid in photosynthesis?

The coloring maximizes the amount of light the leaf receives by reflecting the red light that leaves use to photosynthesize back through the leaf.

6. When do most trees produce their flowers? Why at that time of year?

During the dry season, because insects are more active and the flowers are less likely to be damaged by rain.

7. Rainforest trees produce a wide variety of different types of flowers, to attract the range of pollinators that exist. Draw lines to match the flower type with the animal suited to pollinate it.



8. Like flowers, different fruits attract different animals to disperse the seeds. What kind of fruit would attract the following animals?

a. Monkeys

Large green and yellow fruits.

b. Bats

Strong-smelling fruits.

c. Birds

Small, brightly colored fruit and berries.

Above and Beyond...

1. Consider the above question. Why is each animal attracted to the kind of fruit it eats?

9. While seeds will germinate near the parent tree, most are designed to be dispersed. What are some methods used for seed dispersal in the rainforest?

Animals carrying off the seeds, light seeds that "catch" the wind, seeds that float on water.

10. A tree's bark can help protect it from other plants that grow on its trunk and branches, such as vines and epiphytes. What are the several types of bark that provide this protection and what makes each effective?

Smooth bark prevents growth of other plants because there is nothing for vines and epiphytes to affix themselves to. Exfoliating bark comes off in sections under the weight of other plants growing on it. Bark with dense clusters of spines is effective because there are few spots for another plant to attach to.

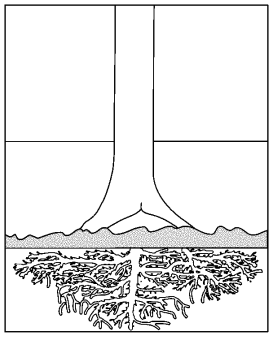
11a. Emergent trees can grow to be as tall as a 20-storey building, yet many have only shallow roots. What structure is used to help provide support?

Buttresses.

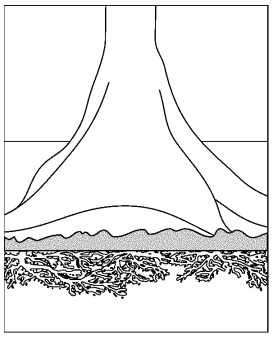
b. What other benefits do these structures provide to the tree?

They increase the surface area for gas exchange and the collection of nutrients from leaf and other litter, and may even protect against vine growth.

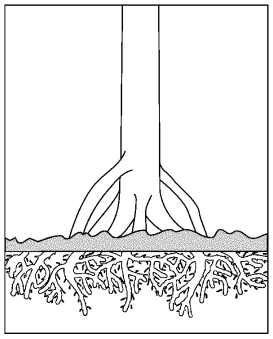
12. Label each root type.



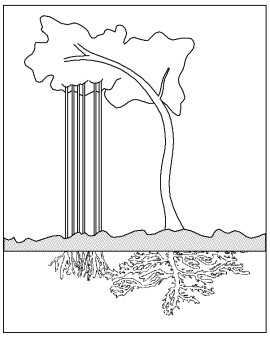
Tap root



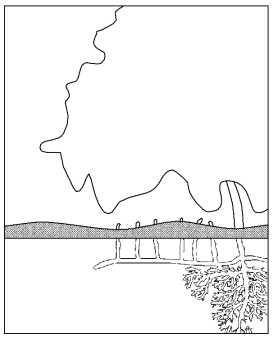
Surface roots



Stilt roots



Adventitious roots



Breathing roots

13. While hiking through the rainforest you come across a tree you have never seen before. It appears to be about 100 feet tall, has smooth bark, large buttressed roots and red tubular flowers. Based on these observations, what can you deduce about the tree and the conditions it is suited for?

It is probably a canopy tree, with shallow roots. The buttressed roots give the tree more support in windy and wet conditions. Its bark helps it keep off vines and epiphytes and its flowers are designed to attract hummingbirds to assist in pollination.

Above and Beyond...

2. In one hectare of tropical rainforest, it is possible to find up to 12 times as many species of trees as are found in one hectare of temperate forest. What accounts for this difference? What are the possible advantages of a more diverse variety of plant life? What might the disadvantages be?

3a. What would happen to a tree if you reduced the size of its crown by half?
b. If the same thing were done to the roots, how would it affect the tree?

14. A large number of plants in the rainforest are dependent on other plants for their survival. Trees, for example, support many other plants, allowing them to live in the canopy. What are the two broad types of rainforest plants that use trees for support?

Vines and epiphytes

15a. Most climbing vines and lianas both begin their lives on the ground. Why is it important for them to grow up to the canopy?

It gives them more access to light, which is scarce on the forest floor.

b. Strangler figs are the opposite, germinating in the canopy and then growing downward. Why is it important for them to grow to the ground?

To develop a root system for the uptake of water and nutrients.

16. How do climbers find tall trees to grow on after they germinate?

They develop a tendril that grows along the forest floor until it reaches shade. It then begins to grow upwards, "hoping" the shadow is cast by a tall tree.