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https://www.100test.com/kao_ti2020/448/2021_2022__E6_89_98_E7_A6_8F_E5_90_AC_E5_c81_448788.htm Rainforest Layers High temperature and rainfall production, more or less uniform throughout the year, characterize the rainforest worldwide. The water that is required to maintain this environment also threatens its existence. If left uncontrolled, the water that constantly bombards the soil would leech out most of the valuable nutrients. Plants and animals in this environment have developed adaptations to deal with the constant deluge and to compete successfully for nutrients. A closer look at the rainforest reveals that it is actually composed of four layers or communities. Each layer has a unique set of environmental conditions and organisms adapted to them. Read the descriptions below and watch for these layers and the infinite variety of life forms that occupy them as you visit La Selva.

The Emergent Layer The tallest trees are the emergents, towering as much as 200 feet (60 m) above the forest floor with trunks that measure up to 16 feet (5 m) around. These huge trunks are usually supported by buttress roots to brace against the high winds. Most of these trees are broad-leaved, hardwood evergreens. They are exposed to greater fluctuations of temperature, wind and rainfall than are their smaller companions. To hold water, leaves often have thick, waxy layers. Emergents may take advantage of the greater air movement above the canopy by developing winged seeds or fruits that are dispersed by wind to other parts of the forest. Sunlight is plentiful and animals

such as eagles, monkeys, butterflies, insect-eating bats and snakes inhabit this layer, some never venturing below it.

The Canopy

The primary layer of the rainforest, the canopy, extends beneath the emergents, rising to 150 feet (45m). Most canopy trees have smooth, oval leaves that come to a point. A possible explanation for this adaptation is that they shed rain quickly, discouraging the growth of lichens and mosses. In cloud forests such as La Selva, the canopy is lower and more dense, formed by smaller trees with twisted crowns of tiny, leathery leaves. At these higher elevations, the leaves have developed a highly reflective property that protects them from the higher levels of intense radiation. This almost solid green shield filters out 80% of the light, preventing its transmission to the forest below. Photosynthesis is everywhere. Flowers and fruits abound. Many species flower simultaneously, aiding cross-pollination. In some species, flowers are produced on the trunks, making it easier for bat pollinators to find their way to the flowers. Monkeys, sloths, bats, treefrogs, ants, beetles, parrots, hummingbirds and snakes, to mention a few, can be found here, often never touching the ground during their lifetime. Epiphytes, some 28,000 species worldwide, use every tree surface as a place to live. Hollow trunks of trees and pools of water in bromeliads often are micro-communities within the Canopy.

The Understory

This area gets only 2-5% of the sunlight available to the canopy. This limited light encourages the plant residents to devise unique ways to survive, such as the solar-collecting dark green leaves. Plants that survive in the understory include dwarf palms and soft-stalked species of families,

such as the ginger family, acanthus and prayer plant or Maranta. These plants seldom grow to more than 12 feet (3.5 m) in height. Understory plants have a more difficult time with pollination because of the lack of air movement. Most rely on insects. Some produce strong smelling flowers, others produce flowers and fruit on their trunks. This phenomenon, known as cauliflory, makes them more conspicuous to aid the process of pollination and seed dispersal. Many animals live here, including snakes, frogs, parakeets, leopards or jaguars and the largest concentration of insects. The Forest Floor Almost no plants grow in this region of 0-2% light and 100% humidity. The few flowering plants that live here tolerate deep shade. The floor itself is covered with a litter of rapidly decomposing vegetation and organisms that break down into usable nutrients. A leaf that might take one year to decompose in a temperate climate, will disappear in just six weeks on the rainforest floor. A high proportion of the nutrients in the system are locked in the large biomass (trees and other plant storage systems). There is heavy competition for these nutrients. This is why many trees are so shallow-rooted. Large mammals, such as tapirs, forage for roots and tubers. Insects, including termites, cockroaches, beetles, centipedes, millipedes, scorpions and earthworms, along with the fungi, use the organic litter as a source of food.

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