4.2 The tropical rainforests

Here you'll see how the rainforests grew, and adapted to a hot wet climate.

The Earth's richest ecosystem

Vegetation grows well in hot damp places – like tropical rainforests! There you'll find thousands of species of trees and plants. And thousands of species of insects and other animals, that live in them.

The vegetation

Four layers

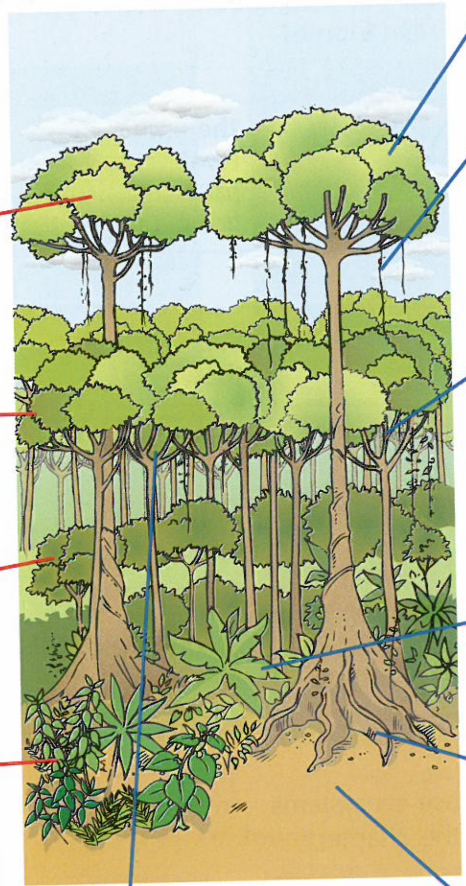
The trees and plants of the rainforest form four layers:

1 the emergents
These are the tallest trees, up to 60 m tall.

2 the canopy
It's the thickest layer, where most of the animals live.

3 the under-canopy
It has young trees, shorter trees, and bushes.

4 the shrub layer
Here you find ferns and other plants that grow close to the ground.



Adaptations

The vegetation has adapted to get sunlight, and protect itself. Look at these examples.

A The **emergents** reach sunlight by growing tall.

B Thick vines called **lianas** reach sunlight by looping around tree branches.

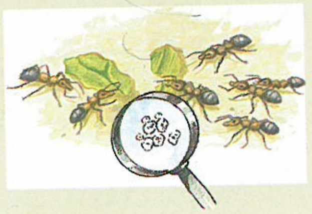
C Plants called **epiphytes** just perch on high branches. They feed on rain, and nutrients from rotting leaves.

D Here in the shady shrub layer, plants grow large leaves with lots of chlorophyll, to trap as much sunlight as possible.

E The tallest trees have big strong **buttress roots**, to stop themselves falling over.

F Roots don't grow deep into the soil. They spread out near the surface.

This way, they can quickly take up the nutrients from dead leaves and animal droppings. (These nutrients are released by the worms and other decomposers.)



G And look at some ways the leaves protect themselves:

The soil

The soil is deep. But only the top few inches are much good. Here's why.

When dead leaves and animal droppings fall to the forest floor, they are quickly broken down by insects, worms and bacteria (**decomposers**).

This releases **nutrients**. These are quickly taken up by plant and tree roots, before they can soak deep into the soil.

The animals

Millions of different kinds of animals live in the rainforest. Here are just three:

The emerald tree boa. It can grow over 2 m long. At night, it hangs from a branch to catch its prey: rodents, lizards, and small birds.

The sloth. Its strong claws allow it to hang from branches. Its hair is filled with green algae (tiny plants) to help it hide among the leaves.

The toucan. This bird lives high in the canopy. Its beak helps it feed on fruit, seeds, and berries. It has a loud call, that scares enemies.

Biodiverse

The rainforests are our most biodiverse ecosystem – they have the biggest variety of living things. They cover less than 7% of the Earth's land, but hold over half the known species of plants and animals. They're jumping!

Did you know?
Insects are classed as animals.

Full of treasures

Rainforests gave us fruits like bananas and pineapples. And *thousands* of medical drugs. Aspirin is a copy of a chemical from a rainforest plant. Many cancer drugs come from rainforest plants. Scientists have studied only a tiny % of rainforest plants, so far. They hope to find many other useful drugs.

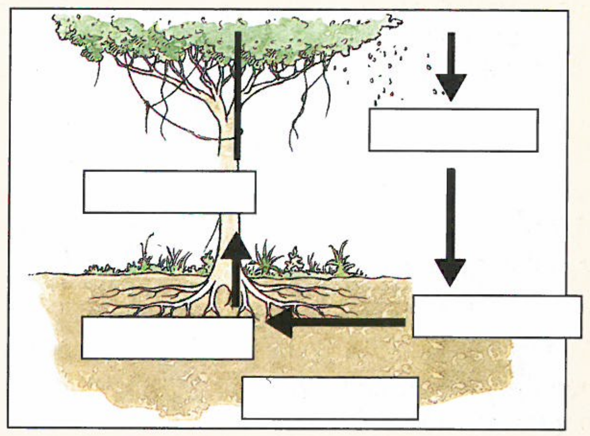
Your turn

1 What do you think is the best thing about rainforests?

2 Copy and complete. The glossary may help for some.
 a The emergents are …
 b Many leaves have drip tips so that …
 c Nutrients are substances that …
 d Roots grow close to the soil surface so that …
 e The emergents have buttress roots so that …
 f The plants on the forest floor have dark green leaves all year round so that …
 g Decomposers are …
 h Most insects and animals in the rainforest live in the canopy, because …

3 The drawing on the right shows part of a rainforest.
 a Make a large copy of it. Then copy each sentence from below the drawing into the correct box.
 b When the trees are cut down, the soil soon becomes useless. See if you can explain why.

4 Do you agree with this person? Explain.



The roots quickly take up the nutrients again.

Decomposers release the nutrients from them.

The nutrients help the vegetation to grow.

Dead leaves and animal waste fall all year round.

The soil down here is poor because the nutrients don't get a chance to sink in.