

TROPICAL DEFORESTATION

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<http://earthobservatory.nasa.gov/Library/Deforestation/>



The clearing of tropical forests across the Earth has been occurring on a large-scale basis for many centuries. This process, known as deforestation, involves the cutting down, burning, and damaging of forests. The loss of tropical rain forest is more profound than merely destruction of beautiful areas. If the current rate of deforestation continues, the world's rain forests will vanish within 100 years-causing unknown effects on global climate and eliminating the majority of plant and animal species on the planet.

Why Deforestation Happens

Deforestation occurs in many ways. Most of the clearing is done for agricultural purposes-grazing cattle, planting crops. Poor farmers chop down a small area (typically a few acres) and burn the tree trunks-a process called Slash and Burn agriculture. Intensive, or modern, agriculture occurs on a much larger scale, sometimes deforesting several square miles at a time. Large cattle pastures often replace rain forest to grow beef for the world market.

Commercial logging is another common form of deforestation, cutting trees for sale as timber or pulp. Logging can occur selectively-where only the economically valuable species are cut-or by clear cutting, where all the trees are cut. Commercial logging uses heavy machinery, such as bulldozers, road graders, and log skidders, to remove cut trees and build roads, which is just as damaging to a forest overall as the chainsaws are to the individual trees.

The causes of deforestation are very complex. A competitive global economy drives the need for money in economically challenged tropical countries. At the national level, governments sell logging concessions to raise money for projects, to pay international debt, or to develop industry. For example, Brazil had an international debt of \$159 billion in 1995, on which it must make payments each year. The logging companies seek to harvest the forest and make profit from the sales of pulp and valuable hardwoods such as mahogany.

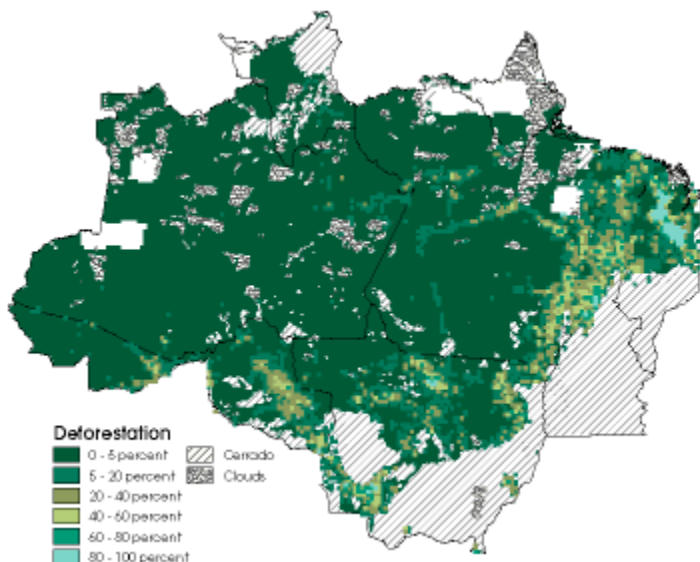


Figure 1. Deforestation in the Brazilian Amazon in 1986. The darker the area, the more forest that is remaining.

Deforestation by a peasant farmer is often done to raise crops for self-subsistence, and is driven by the basic human need for food. Most tropical countries are very poor by U.S. standards, and farming is a basic way of life for a large part of the population. In Brazil, for example, the average annual earnings per person is U.S. \$5400, compared to \$26,980 per person in the United States (World Bank, 1998). In Bolivia, which holds part of the Amazon rain forest, the average earnings per person is \$800. Farmers in these countries do not have the money to buy necessities and must raise crops for food and to sell.

There are other reasons for deforestation, such as to construct towns or dams that flood large areas. Yet, these latter cases constitute only a very small part of the total deforestation.

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Student Worksheet for Tropical Deforestation Name_____

Answer the following questions in **complete** sentences.

1. What is deforestation?
2. At the current rate of deforestation, how long will we have the world's rain forests?
3. What is Slash and Burn agriculture?
4. What are the two most common reasons for deforestation to occur?
5. A third reason for deforestation is logging. What are trees sold for?
6. What do commercial loggers use that is just as damaging to a forest as cutting down the trees?
7. Governments use the money from logging to benefit their countries in three ways? What are the three ways?
8. Why do peasant farmers usually cut down the trees?
9. What are the average earnings per year of a person in Bolivia?
10. What are the average earnings per year of a person in the United States?
11. What is another reason for deforestation; although, this reason only causes a small amount of deforestation?

Answer Key for Tropical Deforestation Name _____

Answer the following questions in **complete** sentences.

1. What is deforestation? **Deforestation involves the cutting down, burning, and damaging of forests.**
2. At the current rate of deforestation, how long will we have the world's rain forests? **The world's rain forests will vanish within 100 years.**
3. What is Slash and Burn agriculture? **Poor farmers cut down the trees in an area and burn them in a process called Slash and Burn.**
4. What are the two most common reasons for deforestation to occur? **The two most common reasons for deforestation are planting crops and grazing cattle.**
5. A third reason for deforestation is logging. What are trees sold for? **The trees are sold for timber or pulp.**
6. What do commercial loggers use that is just as damaging to a forest as cutting down the trees? **The commercial loggers use heavy machinery such as bulldozers, road graders, and log skidders that damage the forest.**
7. Governments use the money from logging to benefit their countries in three ways? What are the three ways? **Governments use the money from logging to raise money for projects, to pay off debt, or to develop industry.**
8. Why do peasant farmers usually cut down the trees? **Peasant farmers cut down the trees to grow crops to feed their families and buy a few necessities.**
9. What are the average earnings per year of a person in Bolivia? **The average Bolivian earns \$800 per year according to the reading.**
10. What are the average earnings per year of a person in the United States? **The average American earns \$26,980 per year according to the reading.**
11. What is another reason for deforestation; although, this reason only causes a small amount of deforestation? **The other reason for deforestation is the building of towns or dams.**

MEMO

TO: Write the first and last name of the person to whom you are sending the memo

FROM: Write your first and last name.

RE: One or two words to tell what the memo is about.

DATE: Write the date you are writing the memo.

Notice that there is no “Dear Susie,” or “Waz ↑?” at the beginning. A memo is not the place to chat and be friendly.

Information within a memo should be kept very brief and to the point. This is a quick, easy way to get information to somebody else.

Paragraphs should not be indented. This is called block style.

When you have shared all of the information you need to, do not sign it, “KIT” or “BFF” or “♥Julie.” In fact, do not sign it at all. At least not on the bottom. You will frequently see the initials of the person sending the memo signed immediately after his or her name in the header above.

Deforestation Final Assessment

CHOOSE ONE.

OPTION A

You are the person in charge of a work crew hired by a pharmaceutical company to harvest tree bark in Bolivia or Brazil. The tree bark is used for an important medicine but harvesting the tree bark kills the tree. Write a memo to your crew describing what you will be doing, including step-by-step slash-and-burn instructions. Be sure to explain why and where you will be working.

OPTION B

You are an environmentalist who is strongly opposed to deforestation for ANY reason. You are writing the government of Brazil or Bolivia and pleading with them to stop deforestation. Be sure to point out the effects of deforestation.

OPTION C

You are the person in the Brazilian or Bolivian government that makes the decision to deforest an area. Be sure to explain why the deforestation is necessary and where it will occur.

You will be assessed according to the 6 Trait Writing Rubric. You will be assessed in the traits of Conventions, Ideas, and Organization.

Tropical Rain Forests Information

<http://earthobservatory.nasa.gov/Laboratory/Biome/biorainforest.html>



Temperature: 20°C to 25°C, must remain warm and frost-free

Precipitation: 2,000 to 10,000 millimeters of rain per year

Vegetation: Vines, palm trees, orchids, ferns

Location: Between the Tropic of Cancer and the Tropic of Capricorn

Description: There are two types of rainforests, tropical and temperate. Tropical rainforests are found closer to the equator where it is warm. Temperate rainforests are found near the cooler coastal areas further north or south of the equator.

The tropical rainforest is a hot, moist biome where it rains all year long. It is known for its dense canopies of vegetation that form three different layers. The top layer or canopy contains giant trees that grow to heights of 75 m (about 250 ft) or more. This layer of vegetation prevents much of the sunlight from reaching the ground. Thick, woody vines are also found in the canopy.

They climb trees in the canopy to reach for sunlight. The middle layer, or understory, is made up of vines, smaller trees, ferns, and palms. A large number of plants from this level are used as common houseplants. Because of the small amount of sunlight and rainfall these plants receive, they adapt easily to home environments. The bottom layer or floor of the rainforest is covered with wet leaves and leaf litter. This material decomposes rapidly in the wet, warm conditions (like a compost pile) sending nutrients back into the soil. Few plants are found on the floor of the forest due to the lack of sunlight. However, the hot, moist atmosphere and all the dead plant material create the perfect conditions in which bacteria and other microorganisms can thrive.

Draw the three layers of the rain forest and label them in the space below. Add a few trees that are even taller than the canopy layer. Call these trees the Emergent Layer.