

Tundra

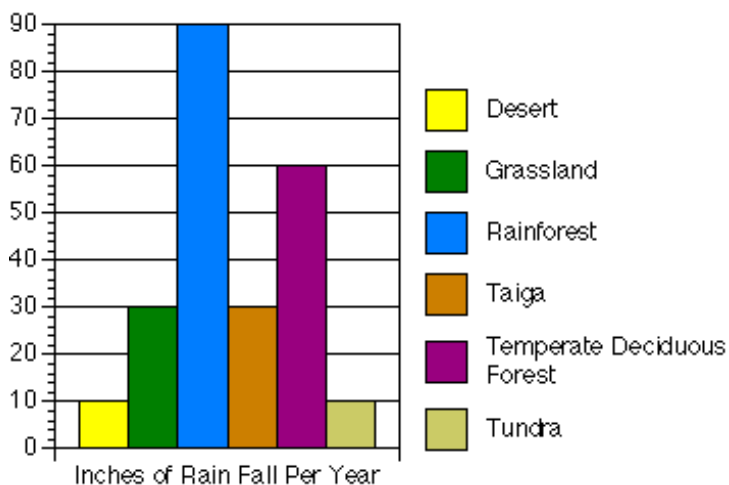


The tundra is at the top of the world -- around the North Pole! Below a thin layer of tundra soil is its permafrost, a permanently frozen layer of ground.

During the brief summers, the top section of the soil may thaw just long enough to allow plants to grow.

The frigid cold and deep snow makes life in the tundra very difficult.

Every animal must have adaptations in order to survive. Some have thick fur which turns white in the winter. Others find a place to hibernate during the winter months.



Temperatures during the arctic winter can dip to -51°C ! The average or mean temperature of the warmest month is around 10°C .

Annual precipitation is very low, usually less than 25 centimeters.

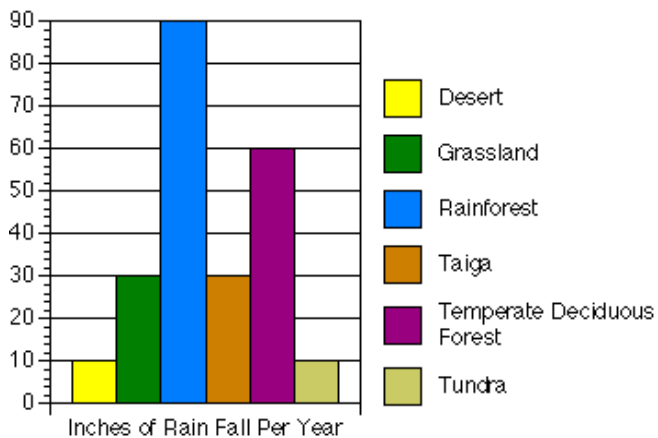
During the short-growing season in the summer, the tundra blooms with a variety of low-growing plants with a height between 3 – 10 centimeters.

The tundra landscape is a stark and barren place. The plants growing in the tundra are often small and grow close to the ground.

The soil accumulates in pockets or cracks in rocks, small shrubs may grow.

<http://www.mbgnet.net/sets/tundra/plants/18.htm> The tundra landscape is often covered with rocks. The constant freezing and thawing in the tundra helps to break the rocks into smaller pieces called weathering.

Desert



The hot desert is a land of extremes: extreme heat and extreme dryness; sudden flash floods and cold nights.

In most places, rain falls steadily throughout the year. But in the desert, there may be only a few periods of rains per year with a lot of time between rains, this is called a drought.

Everyone knows that during the day many deserts are hot, very hot. Temperatures in excess of 38 °C are not uncommon. Yet at night, the same deserts can have temperatures fall to 4 °C? Why?

Since deserts usually have only between 10 and 20 percent humidity to trap temperatures and have so few trees and other vegetation to retain heat, they cool down rapidly when the sun sets, and heat up quickly after the sun rises. How do you think plants grow in a place that is very, very dry?

Many of the fascinating features of desert plants are adaptations.

- * Ability to collect and store water.
- * Features that reduce water loss.
- * Large system of roots that are close to the surface of the soil -- that extend far away from its trunk.

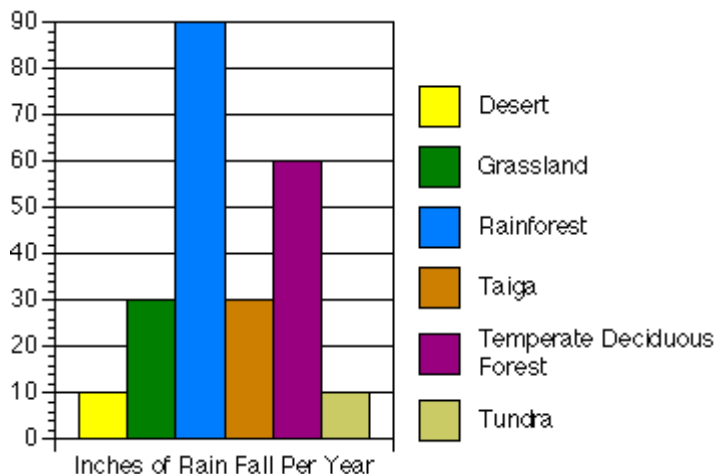
The roots of plants in the desert collect water after rain, and store the water until the next rain. Since many desert plants store water in their spongy tissue, animals will eat them for the moisture.

The thorns on many plants help keep them safe from many animal predators.

Many cacti lean further toward the sun as they grow. Some may eventually uproot themselves.

Succulent leaves can store water inside them. These leaves are usually thick and tough to reduce water loss.

Deciduous Forest



The Deciduous Forest biome has four seasons of winter, spring, summer, and fall. Animals and plants have special adaptations to cope with these yearly changes.

The word "deciduous" means exactly what the leaves on these trees do: change color in autumn, fall off in the winter, and grow back again in the spring. This adaptation helps trees in the forest survive winter.

In the winter, precipitation is in the form of sleet, snow, and hail. The average rainfall is 80 to 160 centimeters per year. The average temperature of the forest is about 10 °C.

Like all living things, deciduous trees and plants have special adaptations to stay alive.

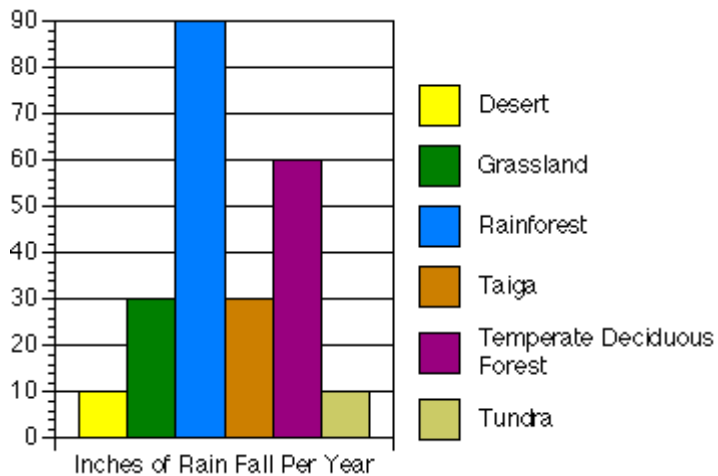
Summer is a busy time for deciduous trees. Their broad leaves capture energy from the sun and convert it to food by photosynthesis. Some of the food is used for growth and some is stored in the roots for next spring.

During the shorter days and cooler weather of autumn, green chlorophyll in the leaves begins to decompose, revealing brilliant oranges, yellows, and reds. Actually, these colors were present in the leaves all year long, but had been hidden by the green pigment of the chlorophyll.

To prepare for winter, deciduous trees and plants become dormant. They lose their leaves and seal the places where leaves were attached with a protective covering called a leaf scar. If they kept their leaves, the water in the leaves would freeze into ice, damaging the leaves and leaving the plant vulnerable to bacteria or fungi. Plants also make a concentrated sugar solution to stop water from freezing in their stems.

The longer days and warmer weather of spring signal to the trees to grow new leaves and begin photosynthesis again.

Rain Forest



Rainforests have many plants that are dense, tall and very green. They are rich in plant and animal species.

Rainforests are very lush and wet.

Rainfall falls regularly throughout the year. The rainforest receives 200-1000 centimeters of rainfall per year.

Tropical rainforests are warm and moist.

To be a tropical rainforest, forested areas must:

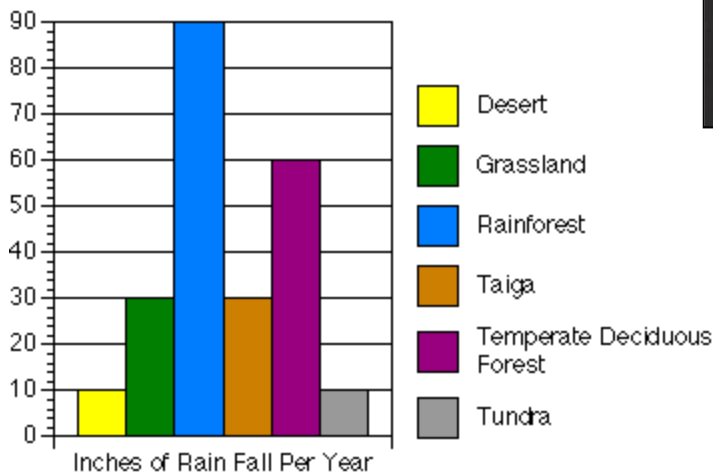
- Lie between the Tropic of Cancer and the Tropic of Capricorn.
- Receive rainfall regularly throughout the year (200-1000 centimeters per year).
- Remain warm and frost free all year long (average or mean temperatures are between 20°C and 30°C) with very little daily fluctuation.

The canopy of trees in tropical forests is multilayered and continuous, allowing little light to reach the ground.

The plants are highly diverse: one square kilometer may contain as many as 100 different tree species. Trees are 25-35 m tall, with buttressed trunks and shallow roots, mostly evergreen, with large dark green leaves. Plants such as orchids, bromeliads, vines (lianas), ferns, mosses, and palms are present in tropical forests.

Tropical rainforest plants also have adaptations to take in what little sunlight is available on the dark forest floor. Large leaves are common; they increase the amount of sunlight a plant can capture. Other plants, like orchids, bromeliads and ferns, grow high up in the canopy where there is more sunlight.

Taiga



The Taiga stretches across a large portion of Canada, Europe and Asia. It is the largest biome in the world.

Winters are cold. Summers are warm. Lots of conifers (evergreen trees with needles) grow here. The taiga has fewer animal species than the tropical or deciduous forests.

The taiga is very, very cold in the winter. But when the warm summer comes, the ice and snow melt.

In the taiga, the average temperature is below freezing for six months of the year. Total yearly precipitation in the taiga is 30 - 85 centimeters. Although the cold winters have some snowfall, most of the precipitation comes during the warm, humid summer months.

The taiga is prone to wildfires. Many trees have adapted to this by growing thick bark, which can protect a tree from a mild fire.

Evergreen trees in the taiga have adaptations that help them survive and grow. One of the best adaptations that evergreen trees have is their needles. They are thin, pointed, and very tough. They do not lose much water to the air, which helps in dry, cold areas.

Evergreen trees keep their leaves all year round. Branches droop downward, which helps shed excess snow. If the branches held more snow it would increase the chance of them breaking during a heavy storm. The needles help keep the trees warm during the winter.

Grassland

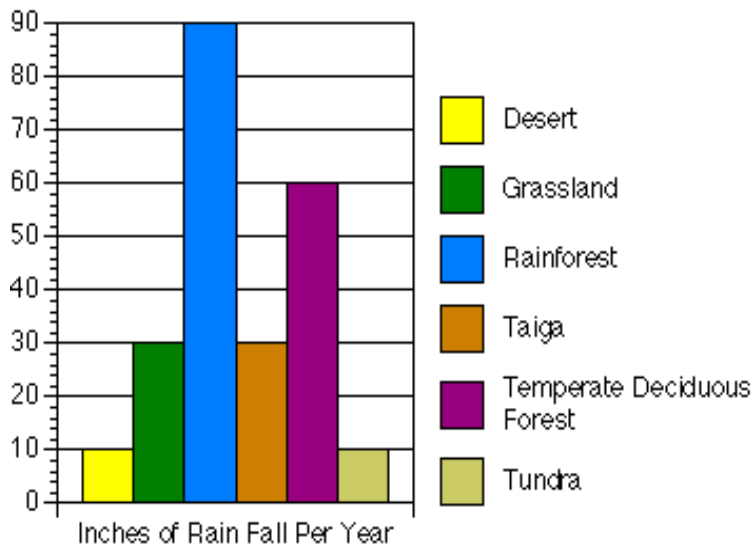


Grasslands are big open spaces.

There are not many bushes in the grassland. Trees are found only by rivers and streams. The grassland seems like an endless ocean of grass.

Its hot summers cause the plants to be baked into a nice crisp golden brown, and in the winter the land freezes over and is carved by powerful winds that are able to gather terrific speed because of the vast open area grasslands provide.

Soft stems enable prairie grasses to bend in the wind



Grasslands receive about 25 to 80 centimeters of rain per year. If they received more rain, the grasslands would become a forest. If they received less, they would become a desert. Grasslands are often located between deserts and forests.

The wide open prairies are maintained by fire and grazing animals. Adaptations are the characteristics that help an organism survive, reproduce, and grow in its environment. Plants living in the grasslands have adapted to dealing with fires. During a fire, while above-ground portions of grasses may die, the root portions survive to sprout again

Grassland soil tends to be deep and fertile. The roots of the grasses usually reach far into the soil. In North America, the prairies were once inhabited by huge herds of bison and pronghorn antelopes who fed on the prairie grasses. These herds are almost gone now, and most of the prairies have been converted into the richest agricultural region on earth. Crops grow well in the rich soil.

Roots of prairie grasses extend deep into the ground to absorb as much moisture as they can.