ThoughtCo.

Which Trees Offset Global Warming Best?

Some trees are better than others at absorbing carbon dioxide

by Earth Talk
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Trees are important tools in the fight to stave off global warming. They absorb and store the key greenhouse gas emitted by our cars and power plants, carbon dioxide (CO_2), before it has a chance to reach the upper atmosphere (where it can help trap heat around the Earth's surface).

Trees and Carbon Dioxide

While all living plant matter absorbs CO_2 as part of photosynthesis, trees process significantly more than smaller plants due to their large size and extensive root structures. Trees, as kings of the plant world, have much more "woody biomass" to store CO_2 than smaller plants. As a result, trees are considered nature's most efficient "carbon sinks." It is this characteristic which makes planting trees a form of climate change mitigation.

According to the U.S. Department of Energy (DOE), tree species that grow quickly and live long are ideal carbon sinks. Unfortunately, these two attributes are usually mutually exclusive. Given the choice, foresters interested in maximizing the absorption and storage of CO_2 (known as "carbon sequestration") usually favor younger trees that grow more quickly than their older cohorts. However, slower-growing trees can store much more carbon over their significantly longer lives.

Location

Scientists are busy studying the carbon sequestration potential of different types of trees in various parts of the U.S. Examples include eucalyptus in Hawaii, loblolly pine in the southeast, bottomland hardwoods in Mississippi, and poplars (aspens) in the Great Lakes region.

“There are literally dozens of tree species that could be planted depending upon location, climate, and soils,” says Stan Wullschleger, a researcher at Tennessee’s Oak Ridge National Laboratory who specializes in the physiological response of plants to global climate change.

Best Trees to Fight Climate Change

Dave Nowak, a researcher at the U.S. Forest Service’s Northern Research Station in Syracuse, New York, has studied the use of trees for carbon sequestration in urban settings across the United States. A 2002 study he co-authored lists the common horse-chestnut, black walnut, American sweetgum, ponderosa pine, red pine, white pine, London plane, Hispaniolan pine, Douglas fir, scarlet oak, red oak, Virginia live oak, and bald cypress as examples of trees especially good at absorbing and storing CO_2. Nowak advises urban land managers to avoid trees that require a lot of maintenance, as the burning of fossil fuels to power equipment like trucks and chainsaws will only erase the carbon absorption gains otherwise made.

Offset Global Warming

Ultimately, trees of any shape, size, or genetic origin help absorb CO_2. Most scientists agree that the least expensive and perhaps the easiest way for individuals to help offset the CO_2 that they generate in their everyday lives is to plant a tree...any tree, as long as it is appropriate for the given region and climate.

Those who wish to help larger tree planting efforts can donate money or time to the National Arbor Day Foundation or American Forests in the U.S., or to the Tree Canada Foundation in Canada.