



Acid Rain

You are here: [EPA Home](#) [Acid Rain](#) [Effects of Acid Rain](#) [Forests](#)

Effects of Acid Rain - Forests



Over the years, scientists, foresters, and others have noted a slowed growth of some forests. Leaves and needles turn brown and fall off when they should be green and healthy. In extreme cases, individual trees or entire areas of the forest simply die off without an obvious reason.

After much analysis, researchers now know that acid rain causes slower growth, injury, or death of forests. Acid rain has been implicated in forest and soil degradation in many areas of the eastern U.S., particularly high elevation forests of the Appalachian Mountains from Maine to Georgia that include areas such as the Shenandoah and Great Smoky Mountain National Parks. Of course, acid rain is not the only cause of such conditions. Other factors contribute to the overall stress of these areas, including air pollutants, insects, disease, drought, or very cold weather. In most cases, in fact, the impacts of acid rain on trees are due to the combined effects of acid rain and these other environmental stressors. After many years of collecting information on the chemistry and biology of forests, researchers are beginning to understand how acid rain works on the forest soil, trees, and other plants.

- [Acid Rain on the Forest Floor](#)
- [How Acid Rain Harms Trees](#)
- [How Acid Rain Affects Other Plants](#)

Acid Rain on the Forest Floor

A spring shower in the forest washes leaves and falls through the trees to the forest floor below. Some trickles over the ground and runs into streams, rivers, or lakes, and some of the water soaks into the soil. That soil may neutralize some or all of the acidity of the acid rainwater. This ability is called buffering capacity, and without it, soils become more acidic. Differences in soil buffering capacity are an important reason why some areas that receive acid rain show a lot of damage, while other areas that receive about the same amount of acid rain do not appear to be harmed at all. The ability of forest soils to resist, or buffer, acidity depends on the thickness and composition of the soil, as well as the type of bedrock beneath the forest floor. Midwestern states like Nebraska and Indiana have soils that are well buffered. Places in the mountainous northeast, like New York's Adirondack and Catskill Mountains, have thin soils with low buffering capacity.