

SPEAK UP & ACT NOW: SHORT GUIDES TO ADDRESS CLIMATE CHANGEⁱ

TREES & PLANTS

QUESTION: Do trees and plants help address climate change?

ANSWER: Yes. Trees and plants absorb carbon dioxide (a key cause of global warming) from the air and store it. The question of how much depends on many factors, like a tree's age. According to U.S. EPA's [Greenhouse Gas Equivalencies Calculator](#), on average a 10-year-old tree in an urban area sequesters 36 pounds of carbon per year or 0.06 metric ton CO₂ per tree per year.

Although trees capture carbon dioxide, the amount still pales in comparison to the amount of CO₂ emitted by the U.S. alone. A more significant benefit to planting trees is how they can help cool urban areas experiencing extreme heat caused by global warming. They do this by creating shade and releasing moisture into the air through their leaves.

Native trees and plants—meaning those that have evolved and occur naturally in a specific region—offer additional benefits. They create more resilient ecosystems and promote biodiversity, providing critical habitat and food for local species. They also buffer the impacts of extreme weather.

ACTIONS – WHAT CAN WE DO?

- 1. AVOID CUTTING DOWN TREES.** The larger the tree, the more carbon it sequesters. Young trees do not sequester nearly as much carbon as mature trees.
- 2. PLANT NATIVE TREES.** Native trees do double duty—not only do they sequester carbon, they also provide food for pollinators such as bees, beneficial insects, and other wildlife. A good resource is [Piedmont Native Plants: a Guide for Landscapes and Gardens](#). This guide is divided into two chapters on trees—short and tall. Another good resource is [Common Native Trees of Virginia: Identification Guide](#) by Virginia Department of Forestry.
- 3. MANAGE YARD WASTE.** In the short term, methane is even more potent than carbon dioxide when it comes to trapping heat in the atmosphere. One way that methane is produced is by the decomposition of biodegradable materials (like tree limbs, yard clippings, and leaves) in landfills. A brush pile in your yard is preferable to sending this green waste to a landfill. Leaves can also be used as garden mulch. You can also compost green waste at home or use a drop-off location. A good guide is [Composting at Home: How to Reduce Your Waste and Make Your Own Fertilizer](#) by Indiana University's Environmental Resilience

Institute. For drop-off locations in Richmond, Virginia, see [Richmond Compost Initiative](#) (under the “Community Gardens” section).

- 4. MAKE YOUR YARD AND GARDEN PART OF THE SOLUTION.** Plant choices matter. Native perennials are preferable to annuals, for example, because they store more carbon due to their deeper roots and longer lifespans. Flowering and fruiting native plants provide food for local species.
- 5. AVOID COMBUSTION ENGINES.** According to the U.S. EPA, gas-powered yard tools cause 4% of total carbon emissions in the U.S.! Rake your leaves; don’t blow them. Mow your yard with a push or electric mower. These tactics can make an impact if enough of us are willing to change.
- 6. BECOME A CITIZEN SCIENTIST.** Collect data for scientists. Here are some examples of citizen-science projects.
 - [Budburst/Chicago Botanic Garden](#): Observe and report on the leafing, flowering, and fruiting of plants.
 - [Audubon Climate Watch](#): Use a specific protocol to observe and report on birds in your area. Use this link to join: [How to Join Climate Watch](#).
 - [Caterpillars Count!](#): Survey shrubs and trees for caterpillars and other arthropods.
 - [Monarch Model Validator/The University of Maine USGS Maine Cooperative Fish and Wildlife Research Unit](#): Observe and report monarch butterfly migration stopover habitats.
 - [Monarch Watch](#): Track the number of monarchs seen in yards during spring and fall breeding periods.

RESOURCES – WHERE CAN I LEARN MORE?

- [How Gardeners Can Help Mitigate Climate Change](#) by Cathy Caldwell, Piedmont Master Gardeners
- [Save Plants, Save the Planet, Save Ourselves—Native Plants and Nature Based Solutions to Climate Change and Other Threats to Humanity](#) by Emily B. Roberson and Doug Tallamy, Virginia Native Plant Society
- [Sustainable Gardening: Solutions to Climate Change](#), University of Maryland Extension
- [How Many New Trees Would We Need to Offset Our Carbon Emissions?](#) by Andrew Moseman, MIT Climate Portal
- *New Naturalism* by Kelly D. Norris
- *The New Perennial Garden* by Noël Kingsbury

ⁱ Prepared by members of the University of Richmond Osher Special Interest Group on addressing the climate crisis (2024-25)