

A forestry scientist explains how to choose the most sustainable Christmas tree, no matter what it's made of

December 5 2023, by Curtis VanderSchaaf



Christmas tree farms like this one in Greencastle, Ind., can be found in almost every state. Credit: [USDA](#)

Every year, Americans buy somewhere between [35 million and 50](#)

[million Christmas trees](#), and many more pull an artificial tree out of storage for the season. In all, about three-quarters of U.S. households typically have some kind of Christmas tree, [surveys show](#).

People often ask which is more sustainable—a real tree or an artificial one? It's a big debate, and the answer depends on who you ask and which factors you consider.

A more useful question is: How do I find the most sustainable tree of the kind I want to get?

I'm a [forestry professor](#) who works on issues of sustainability. There are advantages and disadvantages to both cut trees and artificial trees. Here are some tips to consider for each.

If you're buying a live Christmas tree

When Christmas trees are alive and growing, they pull [carbon dioxide](#) from the air and use it as the building blocks of their wood. That keeps the greenhouse gases out of the atmosphere, where too much [carbon dioxide](#) contributes to global warming.

This process stops once the tree is harvested. At some point, the cut tree begins to decompose and releases that carbon again.


On the positive side, the tree's root systems will continue to store carbon for some time, and [new trees are typically planted to continue the cycle](#).

So, how do you find the most sustainable live tree?

Think about the tree's origin

If you live in Mississippi, like I do, buying a noble fir (*Abies procera*) means your tree probably came from the Pacific Northwest. That's a long drive, and transportation is a major source of [greenhouse gas](#) emissions. However, in a truck with several hundred trees, each individual tree's transportation emissions are pretty minor.

The most common Christmas tree varies by region: Douglas-fir is also common throughout the Mountain West. Scotch pine and balsam fir are regularly grown in the Great Lakes states. Fraser fir is also popular there but dominant in North Carolina. Leyland cypress and Virginia pine are common in the Southeast.

 **DOUGLAS-FIR** (*Pseudotsuga menziesii*) grows under a range of climatic conditions in the United States, from the mild, wet winters and cool, dry summers of the Pacific Northwest to the more extreme conditions of the Sierra Nevada. It grows best on well-aerated, deep, mildly acidic soils. Douglas-fir is sometimes called red-fir, Oregon-pine, or Douglas-spruce. Douglas-fir is commonly grown on short rotations as a Christmas tree.



Douglas-firs grow primarily in the Western U.S. Credit: [USDA](#)

There are many other wonderful species grown locally. Of course, the lowest-impact cut tree is the one you cut from your own yard.

Also, look for local nurseries that [protect their soils from erosion](#) and minimize harm to surface and groundwater from runoff that can include fertilizers or pesticides.

Disposing of your live tree

What you do with your tree [after the holidays](#) also [matters](#).

Recycling is far better than leaving the wood to decompose in a landfill. Because of the nature of most landfills, [anaerobic conditions](#) will ultimately exist, and decomposition will result in the [release of methane gas](#), which is many times more potent than carbon dioxide at warming the atmosphere.

Look for a [community](#) or [retailer](#) that offers to chip the tree or shred it to create mulch or for use in animal stalls. This keeps it out of landfills and serves a purpose.

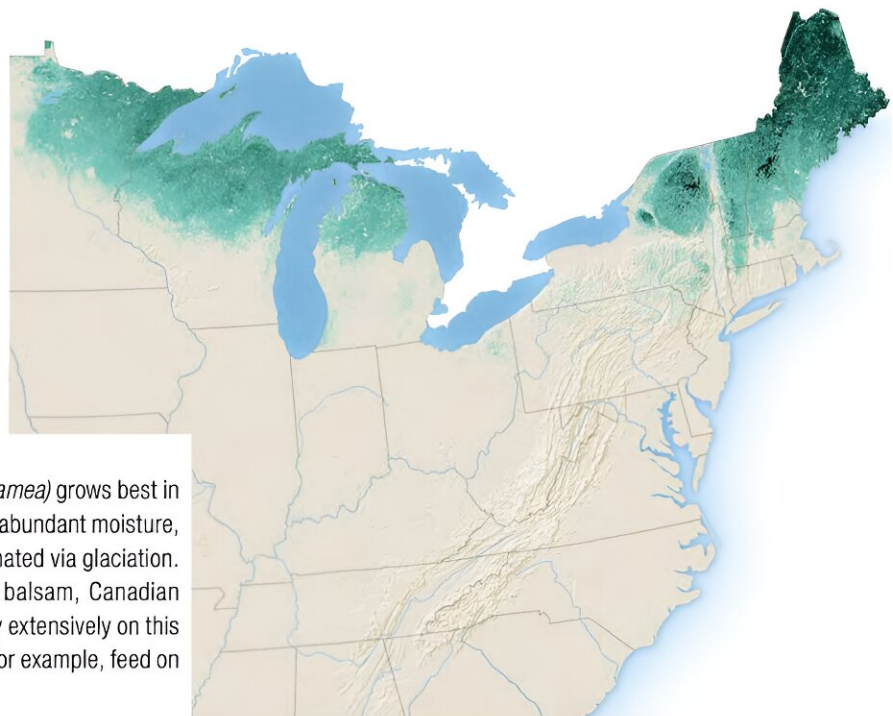
[Composting is another option](#). Trees can be used as an [erosion barrier for sand or soil](#) or as [fish habitat in lakes](#). They can even be donated whole [to zoos](#), where the trees provide entertainment for animals while eventually [decaying outside of a landfill](#), or they can be tossed into a bio-burner to [provide heating for buildings](#). Some people even [feed trees to goats](#).

Alternatively, consider cutting the tree into smaller pieces and letting it rot in the open, placing it in an out-of-the-way place in your yard. It will provide a temporary home for many insects, birds and wildlife.

Artificial trees have different pros and cons

Artificial trees also have advantages—they can last for years and require almost no maintenance. However, they are mostly a petroleum-based product, and when you throw one out, it can take hundreds of years to decompose.

If you plan to buy an artificial Christmas tree—maybe you have allergies like I do, or you're concerned about cost—here are some suggestions to reduce your carbon footprint.



BALSAM FIR (*Abies balsamea*) grows best in areas with cool temperatures and abundant moisture, on a wide range of soils that originated via glaciation. Balsam fir is also referred to as balsam, Canadian balsam, or eastern fir. Wildlife rely extensively on this tree for food and shelter. Moose, for example, feed on balsam fir during winter.

Balsam firs, also popular for Christmas trees, grow in the Great Lakes region, New England and Canada. Credit: [USDA](#)

Reuse, reuse, reuse

The No. 1 way to reduce emissions with an artificial tree is to reuse it for years. Reuse [avoids the carbon impact](#) of producing, packaging and shipping a new one. The break-even point—when your artificial tree's emissions match the emissions of buying a live tree each year—varies from [as little as four years](#) to [as many as 20 years](#), depending on the factors considered.

Many artificial trees are [built to last 30 years or more](#). My family has had one for 25 years. To lengthen its life span, take care when putting it up and storing it. If the tree gets damaged, see if you can find replacement parts rather than replacing the entire tree.

Pay attention to the source

[About 80%](#) of artificial Christmas trees are manufactured in China. [Shipping is pretty efficient](#), but the tree still needs to get to and from the ports. You can also look for one manufactured nearby instead.

Some manufacturers are making trees out of recycled materials, [at least in part](#), which helps reduce the tree's carbon footprint. Shorter [artificial trees](#), or designs with less foliage, also use less plastic.

The type of plastic used also affects the amount of petroleum used. Some [research has suggested](#) that plastic foliage made from polyethylene plastic molds may have a lower impact than traditional [foliage made out of polyvinyl chloride, or PVC](#).

Give the fake tree a second life

If you no longer like your artificial tree—maybe it's too big for a new

home—try reselling the tree or donating it to a [charity, thrift store or nursing home](#) so that others can continue to use it.

You can also get creative and repurpose the old tree limbs into decorative wreaths, garlands or toy trees for a hobby train set.

Lighting also matters

With any holiday tree, be judicious [about turning off lights](#) when no one is around and at night. Consider using fewer lights. LED lights are [more energy efficient](#) than incandescent lights.

In the grand scheme of the holidays, with people traveling and buying and returning gifts through the mail, the carbon footprint of your Christmas tree is a lesser concern. A [round-trip flight](#) from Los Angeles to Boston can produce more than 30 times the lifetime emissions of a typical artificial Christmas tree. Still, it's fairly easy to make more sustainable choices and reduce your carbon footprint when you can.

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