Linda Engle Introduction: Sustainable Idaho is brought to you by the Portneuf Resource Council.

Madison Long: Welcome to Sustainable Idaho. I'm your host Madison Long and today we will be discussing the question of which tree is the more sustainable choice: an artificial tree or a natural, cut tree. I spoke with Ryer Becker, the Forest Operations and Products Manufacturing Extension Specialist with the University of Idaho.

As we enter December, consumers are bundling up and opening their pocket books for Christmas expenses. A 2023 survey by data company Statista found that 70% of American households planned to put up a Christmas tree, 24% of those chose natural or real trees, while 46% opted for artificial trees like the ones found in local big box stores.

Many opt for artificial trees in terms of convenience of set up and take-down, safe use for longer periods of time as they are flame-resistant, their long-term usage, and versatility in size, shape, and color to meet specific needs. Do you think that there are common misconceptions about which option is more sustainable?

RB: Yes, I've heard that even from family member that, "oh, I get a lot more use out of this artificial tree. It's ready to go. I buy it one time and I use it for five, six years. But with a natural tree, you use it one year and it's done. I think their viewpoint of "sustainable" is thinking of multiple uses versus what does it take to produce that artificial tree?

ML: Resources like a 2018 study commissioned by the American Christmas Tree Association, which represents the artificial tree industry, recorded that a 5-year use for artificial trees equaled the overall environmental impact from a one-use natural tree. According to the Center for Biological Diversity, some 270,000 pounds of pesticides are sprayed each year on natural Christmas trees, and have been linked to endocrine disruption, cognitive delay, attention deficit disorder, or cancer. But what about the carbon footprint of artificial trees and their key component of the most dangerous plastic to our health, polyvinyl chloride?

RB: Plastic, that's a petroleum product and oftentimes we see that these trees aren't produced in the United States. They're shipped somewhere overseas. That takes some amount of fossil fuel or energy use production. They may not be produced in the most sustainable factories or facilities. That's a material that once it's produced, it doesn't break down. Real trees are a renewable resource, artificial trees are a producible resource, but not renewable.

ML: How important do you think that lifespan ratio of 1:5 is, when you consider sustainability?

RB: I don't think you're ever going to hit a point where an artificial tree is going to be used enough to outweigh the environmental costs of producing them when compared directly to a natural tree. There's Christmas tree farms and places set up specifically to grow these trees with the long-term business model in mind and the future in mind. Even in the natural forest, you can get a permit from the Forest Service to cut a natural tree, and that tree that you cut will be replaced by another baby tree, which will grow into the next potential Christmas tree. You can't

get much more sustainable than a tree growing and being replanted, whether that's naturally or planted on a tree farm somewhere, because that whole time growing, it's sequestering carbon, it could be part of the filtering of water in the forest system. Whereas the artificial tree is only ever just existing as some type of petroleum-based metal structure. There was never any benefit that tree gave to the environment.

ML: Let's talk specifically about the disposal of trees. According to Yale Sustainability, a natural tree averages a carbon footprint of 16kg of carbon dioxide. Typically 80% of this is absorbed because natural trees are a carbon sink, leaving only around 3.2kg of CO2. Unfortunately, if natural trees are not properly disposed of, like dropped off in a landfill, absorption decreases and methane gas will be released. A landfill promotes an anaerobic environment that slows decomposition. In comparison, artificial trees are not biodegradable to begin with, and Yale Sustainability shows that they have an estimated carbon footprint of 40kg.

RB: When you look at an artificial tree, a lot of times they'll tout them. They're made from remanufactured or recycled materials, but that doesn't mean that once that tree is done that it will be used for anything else. A lot of those materials using those artificial trees don't have another use after they're done. They go into a landfill where they'll sit for whoever knows how long. Whereas when you dispose a real tree, it's a woody product. It'll get broken down back m to a forested system where it degrades, decomposes, and goes back into the natural system there.

ML: One key pillar of sustainability is being economically viable long-term, supporting livelihoods without depleting resources or harming communities. Artificial Christmas trees are typically sold by large national retailers, which operate locations across the country. In Idaho, these businesses provide jobs, contribute to state sales tax revenue, and maintain a presence in the retail and construction sectors. But if we talk about natural trees as the more sustainable option, how do local tree farms fit under that pillar and support the Idaho economy?

RB: They're family farms that have been there for decades or generations and that money that's generated through those stays within that local community. It's using what we have and having it available for the future. When you talk about these small businesses, if you can support them economically, they're going to be there in the future providing a sustainable product. The National Christmas Tree Association states that for every one tree that's cut, they generally plant one or three seedlings in its place for that next generation. And that's ecological sustainability there. But even if you look at going to Forest Service office and pick up a permit, that money generally stays with that forest and goes back to support what they're doing there.

ML: A big selling point in the question of artificial vs. natural trees is cost. For a natural tree, a national forest tree-cutting permit costs $5 to $20 or Christmas tree farms typically cost anywhere from $80 to $150, as compared to the $85 to $1,000 for an artificial tree. However, harvesting natural trees often raises concerns about deforestation. The U.S. Department of Agriculture Forest Service negates this risk, reporting that the permit system helps thin dense areas of trees, which can lead to trees fighting for resources and fueling wildfires. Each permit

also includes guidelines on how to select a tree, limiting size that can be cut and labeling off-limit locations like riparian areas that are difficult to regenerate.

RB: For the number of Christmas trees that are cut each year, us as a society are not going to make a marketable difference on a natural forest system, more than maybe that little microcosm ecosystem where we pull that tree out. If you really take a look at how many acres of forest land there are, there's 12.5 million acres of forest land on the national forest system in Idaho. That's a lot of small baby trees that can be cut for Christmas trees, and that's not even taking into account all the Christmas tree farms that are set up specifically for growing Christmas trees and where it's their business model to grow those trees back.

ML: To conclude our discussion, Becker, which would you say is the more sustainable option?

Ryer Becker: Practically speaking, it's hard to beat a natural Christmas tree. What more sustainable product than a growing plant, a tree itself that can be cut down and used. That tree that you cut can be replaced by another baby tree, which will grow into the next potential Christmas tree. There's different ways to go about it, but at the end of the day, a natural tree, regardless of how you dispose of it, will eventually decompose far, far, far faster than any artificial tree will ever disappear.

ML: Whether choosing an artificial or natural tree this Christmas, consider the sustainable disposal options. For a natural tree, consider the options of local collection programs for recycling, contacting professional services, utilize the help of community groups like the Boy Scouts, composting, or repurposing sections of the tree for mulch, homemade decor, or firewood. For artificial trees, consider donating to a charity or other groups in need, check with local facilities for artificial recycling opportunities, and utilize other DIY projects such as home decor. Thank you to Ryer Becker, U of I Forest Operations and Products Manufacturing Extension Specialist, for answering the question of which Christmas tree is more sustainable, and thank you for tuning in to Sustainable Idaho.

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