

## “Does Your Christmas Tree Have Good Genes?” Excerpt Transcript

*Excerpt from the [December 16, 2016](#) episode of Science Friday.*

**IRA FLATOW:** This is Science Friday, I'm Ira Flatow. You know the holiday season has officially started when you start to see the stands of Christmas tree sellers going up in the street, right? Christmas trees are instantly recognizable, full branches trimmed into that cone-shaped silhouette, you have that woody smell. But the trees can come in all shapes, all sizes, and all species.

And for my next guest, Christmas happens all year round. He runs a Christmas tree lab. Yes, there is a science of the Christmas tree. Gary Chastagner is Professor of Plant Psychopathology at Washington State University in Puyallup, Washington. Welcome to Science Friday.

**GARY CHASTAGNER:** Thank you.

**FLATOW:** Well, let's talk about the what kinds of species of trees are there?

**CHASTAGNER:** There's many different types of conifers that are grown as Christmas trees. And some of it's regional, but if you look nationally at what the most common species are, they would be fraser fir, balsam fir, Douglas fir, noble fir.

**FLATOW:** What kind of lab do you need to study Christmas trees? Does it smell like Christmas all year round in your lab?

**CHASTAGNER:** No, no, unfortunately not all year long. We have two very large temperature-controlled post-harvest rooms. And so when we're doing post-harvest trials at this time of year, when we have trees set up and displayed, then it does smell like Christmas.

But other times, I'm also working on disease problems on Christmas trees. And so it's a traditional mycology lab where we have microscopes, autoclaves, and things like this. And we're growing pathogens that attack Christmas trees on artificial media in a research-type environment.

**FLATOW:** Let's talk about then the needle dropping. What causes it? How do you prevent it in your tree?

**CHASTAGNER:** The biggest factor that causes it is the genetics of the tree. Some tree species are predisposed to shed needles much more so than others. But really, it's the tree drying. And as the tree dries, it tends to shed needles as a protective measure, so that under natural conditions, it wouldn't continue to dry to a point where the tree would be damaged.

So it's a defense mechanism that trees have. And if we cut trees and display them indoors, and if they're not properly cared for, i.e. displayed in water, then as they begin to dry, some of them will start shedding needles to various degrees.

**FLATOW:** How can you tell? Can you tell from the needles themselves the health of a tree?

**CHASTAGNER:** Generally, you could tell how fresh the tree is. Does it have good color? Do the needles appear nice and green, relatively soft, they're not falling off? You don't see any needle loss of the tree, particularly green needles. Sometimes old or dead needles that are on the inside of the tree may be coming off, but that's not an indication of how fresh the tree is.

**FLATOW:** Is there a test you can perform yourself on it, look at the branches, bend it, do something?

**CHASTAGNER:** It's really hard to tell. There are certain species that you can actually take the needles off of the tree and try to bend them between your fingers, much like a carrot stick. And if the needles are off of a tree that has a really high moisture content, they'll snap just like a carrot stick. And as they dry out, then they become more rubbery and they bend a lot more.

**FLATOW:** We covered a really interesting story a few years ago that said never put a fruit basket beneath the tree because the ethylene will cause the needles to drop, like a banana ripening. What do you think of that idea?

**CHASTAGNER:** Well, there's a lot of research, particularly going on in Nova Scotia with balsam fir, that indicates that ethylene may be a contributing factor in needle loss. We currently have a project underway to look at the role of ethylene in needle loss in a broader range of species, and we have a mixed result at this point in time, it's not clear. These studies have just started, so I think it's a little early to tell that.

But we see needle loss on trees that are stored outdoors where there's lots of air movement, and you wouldn't expect ethylene to be the contributing factor there. So there may be more than one thing that's going on that's associated with needle loss.

**FLATOW:** And what's the biggest thing you would like to know as a tree scientist about growing Christmas trees?

**CHASTAGNER:** Well, we're doing some work to understand the genetics of needle loss and how we can identify trees and sources of trees that do not genetically shed needles. So in other words, even if they dry, they're not going to shed needles. So being able to develop genetic markers that would allow us to test an individual tree and tell genetically whether or not it's a source that has good needle retention or poor needle retention would be extremely helpful for the Christmas tree industry and consumers to ensure that they're getting trees that have minimal risk of needle shedding.

**FLATOW:** Gary Chastagner is Professor of Plant Psychopathology at Washington State University. We're going to take a break and come back and talk about prescription pills contributing to at least half of the deaths in a current opioid epidemic. New figures out this hour from the Centers for Disease Control, we'll talk about them. Stay with us.

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