

Scientists works to develop Christmas tree that doesn't shed needles

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After chasing the perfect Christmas tree for three decades, Gary Chastagner could be getting close.

The scientist some call "Mr. Christmas Tree" has already conquered conifer diseases, developed guidelines to keep cut trees fresh and helped introduce new species to the American market.

Now Chastagner is using old-fashioned genetics to create a super-race of conifers immune to consumers' No. 1 complaint about Christmas trees: needles that scatter like dandruff.

If the Washington State University professor succeeds, it will be a boon for housekeepers and a breakthrough for an industry disheartened by the popularity of fake trees.

"If we get the needle thing solved, that will be a huge development in our lifetime," said Oregon tree farmer Jim Heater, past president of the National Christmas Tree Association and one of Chastagner's biggest fans.

Heater was the first grower to put Chastagner's approach into action, testing trees used as breeding stock. The tests allowed Heater to weed out trees that drop needles easily, and preserve those that hold tight to their foliage through bad weather and bad treatment. Seed from the needle champs is giving rise to a tough new generation of fir trees that will hit the market in a few years.

The work is rooted at WSU's Puyallup Research and Extension Center, where Chastagner grows 15 acres of conifers from around the world. In roomy labs, he can experiment on hundreds of whole trees and thousands of branches. It's not high-tech compared to particle physics or biomedicine, but the Christmas tree industry doesn't pull in big research bucks.

About 40 percent of American Christmas trees come from Oregon and Washington, but the nationwide harvest can't touch the value of crops like corn or soy beans. "We're kind of small potatoes," Heater said. "A lot of what has been done to keep the industry on the leading edge, Gary has done single-handedly."

It's not an exaggeration to call Chastagner the industry's scientific Santa Claus, Heater said.

The comparison seems apt as Chastagner examines cut branches for

needle loss in one of his labs. A snowy fringe circles his head. His face is round and his laugh jolly. If he gained a few pounds and strapped on a fake beard, he could pass as shopping-mall Santa.

Chastagner's passion for Christmas trees was sparked in 1980, when panicked growers got the Washington state Legislature to earmark funds to study a blight called Swiss needle cast. Chastagner got the assignment, drawing on his training in plant pathology to devise a regimen of fungicide treatment.

"He cured the problem and saved the Douglas fir industry," Heater said.

Nearly 30 years later, Chastagner never seems to tire of talking about trees. He rattles off the attributes of firs, spruces and pines like a jazz fan enthusing over famous sidemen.

In the lab, Chastagner picks a cut branch from a wire tray and fans its short, broad needles. The undersides are frosted with white. "Korean fir," he says admiringly. In the next tray are boughs of blue-gray corkbark fir, which he gathers up in hands that look more like a farmer's than a scientist's.

The branches were collected from a local grower dabbling in exotic trees. Chastagner will let them dry for several days to weeks, then rank them according to the "Denmark Needle Retention Scale," which he developed in collaboration with Danish researchers.

"There will be absolutely no needles left on some branches," Chastagner said with a chuckle. "You don't want to be growing too many of those."

But a small percentage of branches will hang onto their needles for weeks, even when bone-dry. "Those are the trees I'm looking for."

Just about any Christmas tree will stay fresh for three weeks if it gets enough water. But people cram trees into stands that barely hold a pint -- then let them run dry.

"It's one thing if the tree goes dry," Chastagner said. "It's another if the tree goes dry and all the needles fall off."

Northwest trees are shipped as far as Puerto Rico, Hawaii, Hong Kong and Mexico, said Dennis Tompkins, an industry consultant from Bonney Lake. That means some trees are cut as early as October, making them more susceptible to drying and needle loss.

Chastagner hopes to eventually find genetic markers to quickly single out trees with outstanding needle retention. But in the meantime, the work is laborious. Trees must be tested over multiple years to eliminate the effects of variable weather. Once a grower identifies the winners and culls the losers, it still takes seven to eight years to grow a new crop from the improved seed source.

"Anything with genetics is a long-term project," said Heater.

Like most Northwest growers, his bread and butter is the noble fir -- sometimes called the Cadillac of Christmas trees. The species is excellent at hanging onto its needles, Chastagner said. So much of his needle research is focused on promising species from other parts of the world. That includes Europe's most popular Christmas tree, the glossy-needled Nordmann fir.

A few Northwest tree farms offer Nordmanns and their close cousin, Turkish firs. Both species resist many pests and diseases, including the root rot that has become a major problem for some noble-fir plantations, Chastagner said. But both species can be prone to needle loss, hence the need for testing and improved varieties before they're more widely

adopted in America.

As for the perfect Christmas tree, tastes vary so widely that there will never be agreement on whether bushy is better than sparse, or fir more fragrant than spruce, Chastagner said. But everyone wants a tree that doesn't shed.

FACTS

Douglas fir

Pros: Good needle retention, fragrant, inexpensive

Cons: Branches can't hold heavy ornaments

FACTS

Noble fir

Pros: Excellent needle retention, strong branches

Cons: Expensive, susceptible to root rot

FACTS

Nordmann fir

Pros: Glossy foliage, strong branches, disease-resistant

Cons: Not widely available, needle retention varies

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