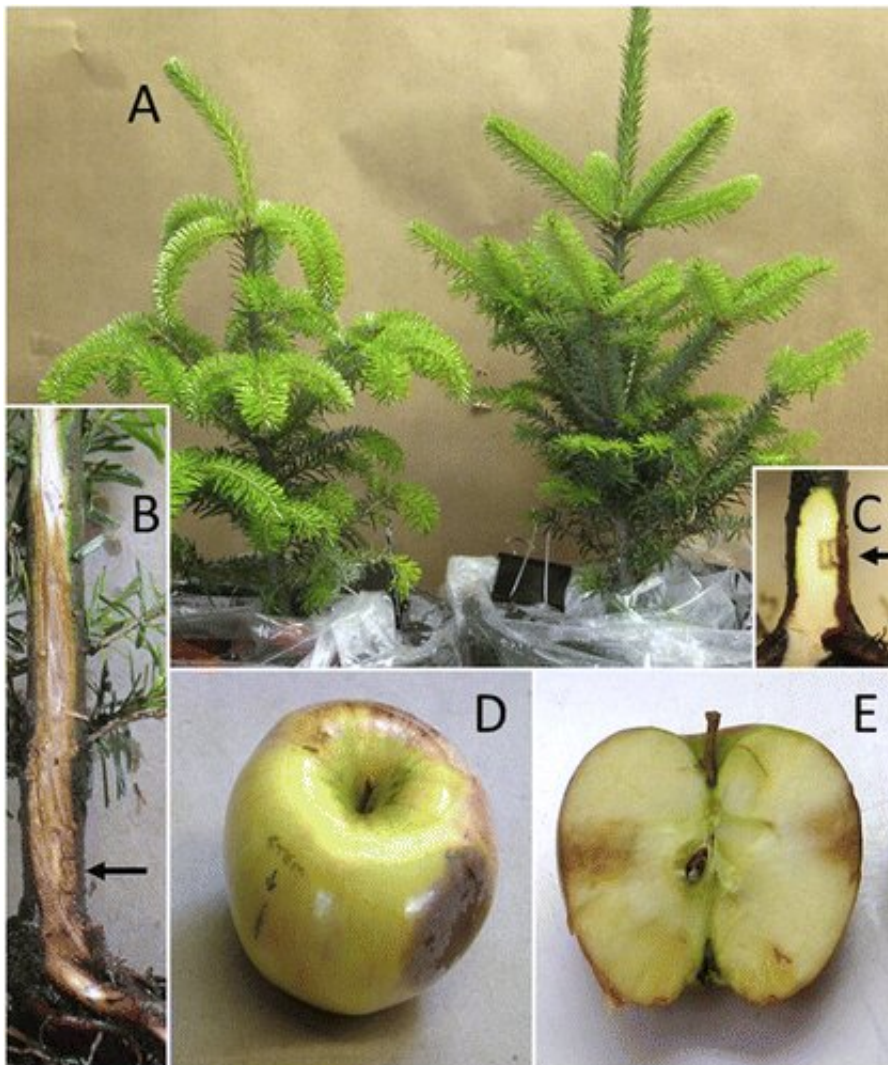


Scientists accidentally discover a new water mold threatening Christmas trees

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Representative potted *Abies fraseri* and inoculated apples used to test Koch's Postulates. Credit: De-Wei Li, Neil P. Schultes, James A. LaMondia, and Richard S. Cowles

Grown as Christmas trees, Fraser firs are highly prized for their rich color and pleasant scent as well as their ability to hold their needles. Unfortunately, they are also highly susceptible to devastating root rot diseases caused by water molds in the genus *Phytophthora*.

Scientists in Connecticut were conducting experiments testing various methods to grow healthier Fraser trees when they accidentally discovered a new species of *Phytophthora*. They collected the diseased plants, isolated and grew the pathogen on artificial media, then inoculated it into healthy [plants](#) before re-isolating it to prove its pathogenicity.

"Once the organism was isolated, the presence of unusually thick spore walls alerted us that this may not be a commonly encountered species," said Rich Cowles, a scientist at the Connecticut Agricultural Experiment Station involved with this study, "and so comparison of several genes' sequences with known *Phytophthora* species was used to discover how our unknown was related to other, previously described species." In fact, they had discovered a new species altogether.

The fact that these scientists so readily discovered a new species of *Phytophthora* infecting Christmas trees suggests that there could be many more species waiting to be discovered. Recognizing the greater biodiversity among this genus infecting Christmas [trees](#) is important. Transportation of infected nursery stock and chance encounters of different *Phytophthora* species in the field can lead to new hybrids arising, which can have different pathogenic characteristics than their parent species.

"Knowing how many and which [species](#) are present is important, not only for Christmas tree growers, but also for protecting our natural environment," Cowles adds.

Also of note, this research was conducted using apples to do the initial isolation of Phytophthora, a method that dates back to 1931, demonstrating that old methods in [plant pathology](#) are still valid and useful. "Combining this robust old technique worked well with modern molecular biology methods to isolate, and then identify our unknown plant disease," according to Cowles.

More information: De-Wei Li et al, Phytophthora abietivora, A New Species Isolated from Diseased Christmas Trees in Connecticut, U.S.A., *Plant Disease* (2019). [DOI: 10.1094/PDIS-03-19-0583-RE](https://doi.org/10.1094/PDIS-03-19-0583-RE)

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