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HOME-GARDEN

Beech leaf disease a threat to trees, but treatments offer hope

Grace Elton Special to the Telegram & Gazette USA TODAY NETWORK

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Key Points

- BLD is caused by a nematode, or microscopic worm, that parasitizes the leaves of beech trees.
- While European beech are often planted as specimen trees, American beech (Fagus grandifolia) makes up ten percent of Massachusetts forests.
- Researchers at the Connecticut Agricultural Extension Experiment Station have reported a few methods of treatment that are showing promising results.

When I think of Worcester's urban forest, I picture the giant European beech (*Fagus sylvatica*) trees that many of my neighbors have in their front yards. These trees, native to much of Europe, have silvery-gray bark that looks like sagging elephant skin when the plants are mature. European beech trees have noble status in my book. In their native habitat, there are specimens known to be over 600 years old. Beech trees clone themselves by producing growth from their roots that turns into full grown trees as the parent tree declines. Though less common, limbs can also naturally bend down and touch the ground, rooting into the soil to form new trees. Both of these processes can result in a tree's genetics persisting on Earth for thousands of years.

While European beech are often planted as specimen trees, American beech (*Fagus grandifolia*) makes up ten percent of Massachusetts forests. They represent nearly 141 million trees and provide a critical food source for wildlife in the plentiful beechnuts they produce.

A few years ago, in the spring, I was startled to see the newly emerging leaves on my American beech trees display dark stripes between the leaf veins. I knew immediately that this meant that they were infected with beech leaf disease (BLD). Since it was discovered in 2012, BLD has spread to infect both European and American beeches at an alarming rate. It now infects beeches in every New England state.

BLD is caused by a nematode, or microscopic worm, that parasitizes the leaves of beech trees. The nematodes overwinter in the buds, feeding on the forming leaves. In the spring, the damage is evident in dark banding between veins or in deformed, leathery leaves. Nematodes spread easily, hitchhiking on animals, or moving through rain splash and even tiny windblown droplets of water. This makes them very hard to contain. Infected trees drop leaves, sending out a second flush midseason. The process takes a lot of energy, weakening the trees and eventually killing them.

Researchers at the Connecticut Agricultural Extension Experiment Station have reported a few methods of treatment that are showing promising results, but they are labor intensive, require annual application, and can be expensive. Using their data, I chose a two-pronged approach for my trees that balanced a bigger investment up front, followed by maintenance treatments that I could apply with over-the-counter products. First, I hired a reputable arboriculture company who injected my beech trees with the fungicide thiabendazole.

This is the same treatment people use for certain infections and is also used to prevent fruit from rotting. Although it is relatively safe, only a professional can apply it. It was expensive, but the treatment lasts for two years. Second, because beech trees have thin bark and multiple injections can do more harm than good, I also chose a treatment involving a bark spray of potassium phosphate. This can be purchased over the counter and applied by homeowners. Potassium phosphate helps activate a plant's biochemical defense system.

I like to think I'm giving my trees a superpower to defend themselves against the invading nematodes. Potassium phosphate is safe for humans and the environment, but needs to be applied twice a year, making it a bit labor intensive. Researchers haven't given guidance as to how many years these treatments need to be applied. For now, they buy our specimen trees more time while scientists work to understand BLD better.

We can take heart that homeowners and municipalities have options when trying to save specimen beech trees. But what about the future of the 141 million American beech trees throughout our Massachusetts forests? When I walk in the natural areas at New England Botanic Garden, every young American beech has banded or distorted leaves. There is a nearly 100 percent infection rate.

I can't imagine our woodlands without beech trees, especially in the fall when their leaves turn a bright golden yellow. Even though landscape-scale solutions to BLD remain out of reach for now, recent advancements offer a reminder: we still have opportunities to put our collective efforts toward supporting research and finding solutions.

Gardening Central Mass. offers ecologically focused tips and helpful stories for home gardeners from New England Botanic Garden at Tower Hill CEO Grace Elton and Director of Horticulture Steven Conaway. Located in Boylston, New England Botanic Garden creates experiences with plants that inspire people and improve the world. Learn more at nebg.org. The column is published on the third Sunday of the month.