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BEECH LEAF DISEASE

Beech leaf disease was first discovered in Ohio in 2012. It has since been found in Pennsylvania, New York, and Ontario, Canada in North America. In Connecticut, this disease was first detected in August 2019 (Figure 1). The disease has been observed mainly in forests, but also in landscaped areas. Beech leaf disease causes premature leaf drop and thin canopies, and also makes the trees more susceptible to other pests.

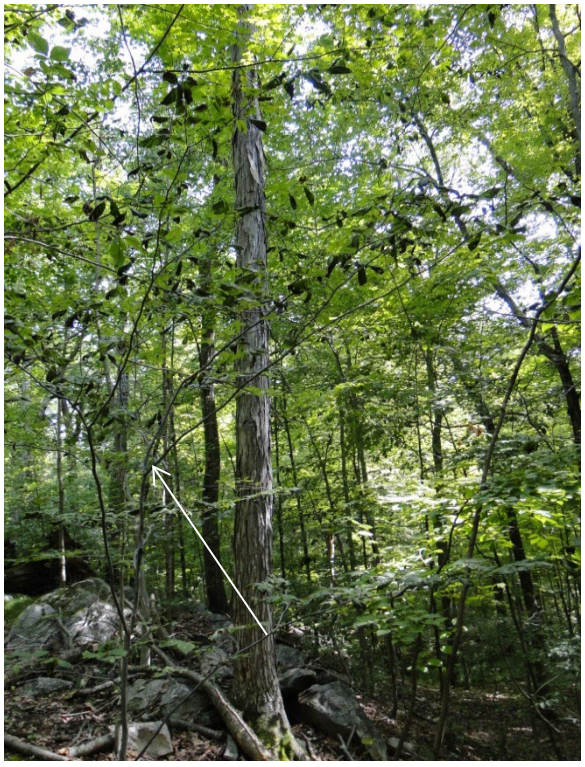

Figure 1. A beech sapling affected by beech leaf disease (arrow).

SYMPTOMS AND DIAGNOSTICS

Dark green striping between leaf veins is a chacteristic symptom of this disease, which is expecially noticeble when viewing upward into the canopy (Figure 2) or viewing against light (Figure 3). The symptom appears upon leaf-out in the spring. The initial symptoms are darkening and wrinkling of small portion of leaf tissues between veins (Figures 3 and 4). As disease progresses, the infected leaf tissues turn yellow, slightly raised, crinkly, and leathery (Figure 5). Heavily infect leaves are curled downward, shrunken, and prematurely defoliated (Figure 6). Sapling and young trees are more susceptible to the disease and die within about three years after symptoms are observed, which reduce the proportion of American beech in the affected forest areas. Symptoms of other

Figure 2. Dark green striping between veins on beech leaves.

pests, such as beech blight aphid, European beech scale, eriophyid mites, and anthracnose, resemble beech leaf disease, which stresses the need for a laboratory examination.

DISEASE DEVELOPMENT

A foliar nematode species, *Litylenchus crenatae,* that was first described in Japan is associated with beech leaf disease and pathogenic to American beech (*Fagus grandifolia*), European beech (*F. sylvatica*), and oriental beech (*F. orientalis*). However, the origin of the pathogen and its distribution is unclear. Emerging leaves can be infected by the pathogen in the spring. But, survival and dissemination of the pathogens are unknown.

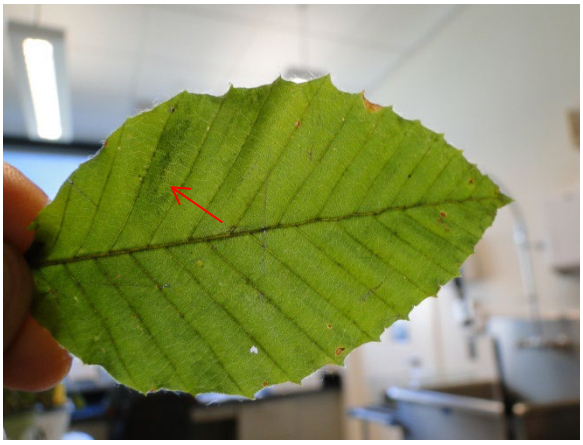

Figure 3. Darkening of leaf tissues between veins.

Figure 4. Wrinkling of leaf tissues between veins.

DISEASE MANAGEMENT

As little is known about the biology of the pathogen and epidemiology of the disease, no effective control or eradication measures have been developed. In general, the spread of invasive species can be prevented by restricting the movement of plant materials and monitoring trees closely for signs and symptoms. Beech leaf disease has been spread very quickly eastward in the United States. Management efforts for the disease should focus on preventing the introduction of this invasive pathogen. Quarantines and regulations can be used to prevent further spread of beech leaf disease.

August 2019

Figure 5. Yellow striping between veins on the upper surface of beech leaves.

Figure 6. Curling and browning of leaves.