

RESEARCH LABORATORY TECHNICAL REPORT



Ash Yellows

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Ash yellows (AY) is a chronic, systemic disease that affects many North American ash species. White ash (*Fraxinus americana*) and green ash (*Fraxinus pennsylvanica*) are the most commonly affected but many other ash species may also be affected. Ash Yellows occurs from the Rocky Mountains east to Massachusetts, and from southern Canada south to Arkansas. There have also been isolated cases in the southwest, including city street trees in Phoenix, Arizona. This disease occurs in forests and woodlots as well as developed landscapes.

Figure 1: Symptoms of ash yellows. Note tufting of foliage on branch ends and thin chlorotic crown



Causal Agent

Ash yellows is caused by a phytoplasma, *Candidatus fraxinii* (MLO) that infests the phloem (inner bark) of the vascular system of many of the declining ash trees.

It is spread from diseased to healthy trees by leafhoppers and other related sucking insects. Phytoplasmas are specialized bacteria that are enveloped only by a cell membrane but lack a true cell wall which are present on other bacteria species. Phytoplasmas are obligate parasites that colonize the vascular tissues of the host, particularly the phloem (inner bark) of trees.

Symptoms

Diseased trees exhibit an overall reduction in plant vitality that is similar to decline caused by

Figure 2: Deliquescent branching
Photo courtesy of Bugwood: Univ. of Georgia



environmental stresses. Symptoms include reduced twig growth that produces tufting of foliage at the ends of branches (Figure 1). The terminal shoot on branches may grow at a slower rate than lateral twigs producing a symptom known as deliquescent branching (Figure 2). Leaves are stunted, light green to yellow and the crown appears thin. Bark splitting may occur on the lower stem and sprouts and witches broom (a dense proliferation of twigs) may be evident. Branch dieback occurs in later stages of the disease followed by death.

Management

There is no effective prevention for the ash yellows phytoplasma. A systemic antibiotic is registered to suppress symptoms in yellows affected plants but will not cure diseased trees nor effectively prevent new infections. Treated trees continue to decline and die but at a slower rate. Removing infected trees growing among healthy specimens may reduce the rate of spread. Appropriate irrigation, fertilization, mulching, and pruning will help improve ash vitality and may help prolong the life span of infected trees. Currently, resistant selections of native ash species are not available but research is being conducted to evaluate that possibility.



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