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Disease and Insect Resistant Ornamental Plants

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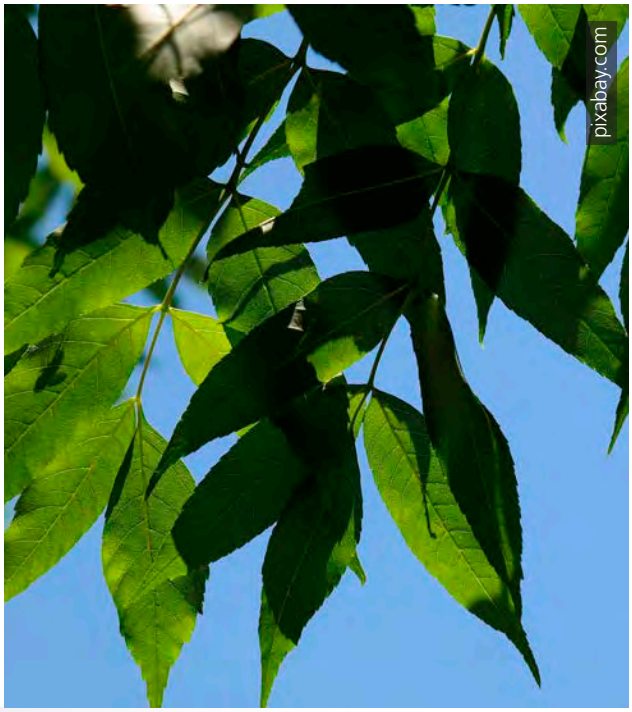
Fraxinus

Ash



Fraxinus is a genus of medium to large, mostly deciduous ash trees native to Asia and North America. Ashes are common in forests of the eastern United States as well as in urban and suburban landscapes where they were widely planted to replace native elms killed by Dutch elm disease. In addition to their landscape value, ash trees are a significant source of timber for multiple uses.

Diseases of ash include anthracnose and ash yellows. However, the most serious problem in both forest and landscape settings is the emerald ash borer.

INSECTS

Emerald Ash Borer, *Agrilus planipennis*, is a wood-boring beetle indigenous to Asia. Since its discovery in Detroit, Michigan and Ontario, Canada in 2002, the beetle has spread to 30 states in the Northeast* and Midwest and the Canadian province of Quebec. Emerald ash borer has killed millions of ash trees and is now considered the most destructive and economically costly forest insect ever found in North America (1, 3).

Adult borers feed on ash foliage, but the deadly damage is done by larvae. Feeding on the inner bark, larvae create galleries that eventually girdle and kill the tree. Signs of infestation include D-shaped holes in the bark created by emerging adults.

All native North American ash trees are susceptible to emerald ash borer (1). Unfortunately, this includes the most widely distributed species–*Fraxinus americana* (white ash), *F. pennsylvanica* (green ash) and *F. nigra* (black ash) which are reported as highly vulnerable (6). In 2017 the International Union for Conservation of Nature (IUCN) added these species, along with *F. quadrangulata* (blue ash) and *F. profunda* (pumpkin ash) to the IUCN Red List of Threatened Species™ as critically endangered (4, 5, 9, 10, 11).

Current management strategies include insecticide treatments and regulations to restrict movement of nursery trees, firewood and other ash products from quarantined areas. While the USDA has begun research on biological control, it is not yet a viable management tool (2). Visit emeraldashborer.info/index.php maintained by the USDA Forest Service and Michigan State University for the latest information on emerald ash borer.

*Since it was first confirmed in NYS in Cattaraugus county in 2009, EAB has spread to more than 30 counties including Franklin and St. Lawrence counties in August 2017 and Tompkins county in February 2018. Department of Environmental Conservation regulations and quarantines were updated in May 2017 and can be found at dec.ny.gov/press/110194.

Resistant Selections

Host resistance from native ash species is virtually nonexistent (8). Researchers at the USDA Forest Service and The Ohio State University are collaborating in a breeding program for the development of borer-resistant ash trees. Efforts are focused on hybrids between resistant Asian and susceptible North American species as well as searching for individual native ash trees that show resistance or tolerance (7).

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