MARYLAND COOPERATIVE EXTENSION
UNIVERSITY OF MARYLAND
COLLEGE PARK•EASTERN SHORE

Fact Sheet

Fact Sheet 835

Emerald Ash Borer—Is it Time to Diversify?

Situation

Trees in cities and suburbs have always had a tough environment in which to grow and survive. Poor quality soils, drainage problems, air pollution, extreme temperature swings, and lack of rooting space create stressful situations in which only well-adapted trees survive. In the first half of the twentieth century cities in Maryland were dominated by tough and graceful species such as the American elm. Dutch elm disease is spread by European and American bark beetles and has devastated many of the elms growing in Maryland. The loss of the elms was cataclysmic at the time but it caused many city planners to investigate the use of other tree species.

Solutions and Problem

Trees such as zelkova, red maple, red oak, Callery pear, honey locust, and green and white ash have been some of the most popular species used as street trees over the last 50 years. In corporate building centers and communities in Annapolis, Baltimore, and the Washington Metropolitan area green and white ash trees have been heavily planted as street trees. This is unfortunate because we now have large street planting of two species of tree that can be attacked and destroyed by the invasive species of beetle called the emerald ash borer (EAB), *Agrilus planipennis*. This beetle was accidentally shipped into Prince George's County in 2003. The Maryland Department of Agriculture is working to contain this pest, but introduced

Green ash infested with borers.
Photo by Stanton Gill

Green ash killed by borers.
Photo by Stanton Gill

Green and white ash are large trees. Planting in areas that limit root growth stresses trees making them more susceptible to borer injury.
Photo by Stanton Gill

Alternatives to Fraxinus spp., ash trees

Scientific name	Common name	Residential landscape or specimen planting	Street tree planting	Forest	Average Mature Height (in feet)
Acer buergerianum	Trident maple	X			20–25
Acer griseum	Paperbark maple	X			20–30
Acer rubrum	Red maple	X	X	X	40–60
Acer saccharum	Sugar maple	X	X	X	60–75
Aesculus pavia	Red buckeye	X			10–20
Amelanchier laevis	Allegheny serviceberry	X			15–25
Amelanchier canadensis	Shadblow serviceberry	X			6–20
Asimina triloba	Pawpaw	X			15–20
Betula nigra	River birch	X			40–70
Betula nigra 'Heritage', 'Duraheat'	River birch with white bark	X			40–70
Carpinus betulus	European hornbeam	X			40–70
Carpinus caroliniana	American hornbeam, Ironwood, Musclewood	X			40–60
Cercidiphyllum japonicum	Katsuratree	X			20–30
Cercis canadensis	Redbud	X			20–30
Chionanthus virginicus	White fringetree	X			25–30
Cladrastis kentukea	American yellowwood	X			30–50
Cornus florida	Flowering dogwood	X		X	30–40
Cornus kousa	Kousa dogwood	X			20–30
Fagus grandiflora	American beech	X		X	50–70
Ginkgo biloba	Ginkgo	X			50–80
Gleditsia triacanthos	Thornless honeylocust	X	X		30–70
Halesia diptera	Two-winged silverbell	X			20–30
Hamamelis x intermedia	Hybrid witchhazel	X			15–20
Hamamelis japonica	Japanese witchhazel	X			10–15
Juglans nigra	Black walnut			X	50–75
Koelreuteria paniculata	Goldenrain tree	X	X		30–40
Laburnum x watereri	Goldenchain tree	X			12–15
Liquidambar styraciflua	Sweetgum			X	60–75
Liriodendron tulipfera	Tulip tree			X	70–90
Magnolia macrophylla	Bigleaf magnolia	X			30–40
Magnolia x soulangiana	Saucer magnolia	X			20–30
Magnolia virginiana	Sweetbay magnolia	X			10–20
Nyssa sylvatica	Black tupelo	X	X	X	30–50

Alternatives to Fraxinus spp., ash trees

Scientific name	Common name	Residential landscape or specimen planting	Street tree planting	Forest	Average Mature Height (in feet)
Oxydendrum arboreum	Sourwood, Sorrel tree	X			25–30
Parrotia persica	Ironwood tree	X	X		20–40
Phellodendron amurense	Amur corktree	X			30–45
Platanus x acerifolia	London planetree	X	X		70–100
Platanus occidentalis	American sycamore	X	X	X	75–100
Prunus serotina	Black cherry			X	50–60
Prunus x yedoensis	Yoshino cherry	X			25
Quercus acutissima	Sawtooth oak	X			35–45
Quercus alba	White oak	X	X	X	50–80
Quercus palustris	Pin oak	X	X	X	60–70
Quercus bicolor	Swamp white oak			X	50–60
Quercus phellos	Willow oak	X	X	X	40–60
Quercus prinus	Chestnut oak, Rock oak			X	60–70
Quercus rubra	Red oak	X	X	X	60–75
Quercus stellata	Post oak			X	40–50
Sassafras albidum	Sassafras	X		X	30–60
Sophora japonica	Japanese pagodatree	X	X		50–75
Stewartia pseudocamellia	Japanese stewaria	X			20–40
Styrax japonicus	Japanese snowbell	X			20–30
Styrax obassia	Fragrant snowbell	X			20–30
Syringa x chinensis	Chinese lilac	X	X		10–12
Syringa villosa	Late lilac	X			6–10
Syringa reticulata	Japanese tree lilac	X	X		8–15
Tilia americana	Basswood or American linden	X		X	60–80
Tilia cordata	Littleleaf linden	X	X		60–70
Tilia tomentosa	Silver linden	X	X		50–70
Zelkova serrata	Japanese zelkova	X	X		50–80

pests that have strong flight abilities are often very difficult to contain. The introduction of EAB into Maryland should serve as a wake-up call for diversification of tree planting in landscapes and forest in Maryland.

In Michigan, Ohio, Illinois, and Indiana there are several species of ash that can be attacked by EAB including black, blue, green, white, and pumpkin ash. It is rather rare to find black, blue, and pumpkin ash growing in Maryland. Green and white ash trees are the two dominant species found in our forest and urban plantings.

Although any new invasive species are troublesome, they force us to stand back and

examine whether our landscapes and city street plantings are diverse enough to help us withstand onslaughts of new invasive species. Emerald ash borer is the current problem but with expanding worldwide trade we can expect other invasive insect species to attack our urban forest. The best long-term defense against catastrophic tree loss is to use several species in our landscapes, selecting varieties that have proven their tough and tenacious growth in urban and suburban environments.

The following is a list of alternative trees that can serve as shade trees, street trees, or specimen plantings for green and white ash trees.

Consider planting tree species in genera other than *Acer*, *Betula* and *Platanus*, because these groups are highly susceptible to Asian longhorned beetle (*Anoplophora glabripennis*). This beetle has been found in New Jersey and New York and appears to be moving south into Maryland. Scientists in China report that emerald ash borer can also attack trees in the genera *Ulmus* and *Juglans*. So far, emerald ash borer has only been found on ash in the United States.

Emerald ash borer larva and adults.
Photos by Stanton Gill

References

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