

Commercial Greenhouse and Nursery Production

Alternative Options for Invasive Landscape Plants

*Rosie Lerner and Kyle Daniel, Purdue Horticulture and Landscape Architecture
Lindsey Purcell, Purdue Forestry and Natural Resources*

Purdue Horticulture and Landscape Architecture
www.ag.purdue.edu/HLA
Purdue Forestry and Natural Resources
www.ag.purdue.edu/FNR
Indiana Invasive Species Council
www.entm.purdue.edu/iisc

Ornamental plants provide many environmental and ecological benefits to landscapes and urban areas. They can be aesthetically pleasing, reduce stormwater runoff, lower carbon dioxide and pollutants, alleviate the urban “heat island” effect, and provide habitats to pollinators, birds, and mammals. And in the last 20 years, consumers and the general public have become much more aware of these benefits.

The urban environment is different than most locations in a plant’s native range. It is an ecosystem unlike any other due to extreme environmental pressures. So landscapers and homeowners must use a wide range of plant material that will survive in these unique and often harsh environments. Horticulturalists have continued to discover and introduce plants to broaden the plant palette. Unfortunately, a few of these landscape species can escape into wild areas and create ecological problems in unintended areas such as forests and woodlands. In Indiana, a few frequently used landscape plant species have invaded these natural areas and are displacing native species.

For these reasons, the green industry must begin to produce and use different landscape plants that can replace the invasive species. This publication lists potential alternatives to some of the most notorious and damaging invasive plants in Indiana.

Unlike the many lists available from many resources, we have included native and non-native species. This is an important difference for several reasons, but the two main reasons are:



Figure 1. Many callery pears can produce abundant fruit that are widely distributed by birds.



Figure 2. After their seeds are disseminated, callery pears can invade natural and disturbed areas. The callery pear’s ability to grow in a wide range of conditions and their fast growth rate enable them to effectively compete with other vegetation.



Continued on page 4.

2

Table 1. Common ornamental plants that are at high-risk of becoming invasive or are currently invasive and their potential replacements¹.

Indiana Invasive Species				
Scientific Name	Common Name	Invasive Rank ²	Size Group	Growth Rate ³
<i>Acer platanoides</i>	Norway maple	high	large tree: >30-50 feet	fast
<i>Alnus glutinosa</i>	black alder			
<i>Phellodendron amurense</i>	amur cork tree			
Potential Replacement Species				
Scientific Name	Common Name	Native (Y or N)	Special Characteristics	Growth Rate ³
<i>Acer rubrum</i>	red maple	Y	Susceptible to manganese deficiency. Has vibrant fall color.	fast
<i>Acer saccharum</i>	sugar maple	Y	Not good for compacted, confined soils. Has vibrant fall color	medium
<i>Acer x Fremanii</i>	freeman maple	N	Numerous cultivars vary in fall color and performance.	fast
<i>Aesculus glabra</i>	Ohio buckeye	Y	Prefers moist, deep soils.	slow
<i>Betula nigra</i>	river birch	Y	Prefers wet soils. Generally weak-wooded, Susceptible to bronze birch borer	fast
<i>Cladrastis kentuckea</i>	yellowwood	Y	pH-tolerant, prefers well-drained soils. Has white fragrant flowers.	medium
<i>Diospyros virginiana</i>	persimmon	Y	pH-tolerant, prefers moist, well-drained soils. Difficult to transplant.	slow
<i>Fagus grandifolia</i>	American beech	Y	Prefers moist, well-drained acid soils. Does not tolerate compacted soils.	slow
<i>Fagus sylvatica</i>	European beech	N	More tolerant of alkaline soil than <i>Fagus grandifolia</i> . Numerous cultivars available.	slow/ medium
<i>Ginkgo biloba</i>	ginkgo	N	Suitable for urban/poor soils. Widely adaptable.	medium
<i>Gymnocladus dioicus</i>	Kentucky coffee tree	Y	Widely adaptable. Can be messy — drops pods, leaves.	medium
<i>Quercus bicolor</i>	swamp white oak	Y	Tolerates urban conditions. Prefers wet soils.	medium
<i>Quercus macrocarpa</i>	bur oak	Y	Drought-tolerant. Tolerates clay soils.	slow
<i>Quercus robur</i>	English oak,	N	pH-tolerant. Prefers well-drained soils.	fast
<i>Quercus rubra</i>	red oak	Y	Prefers sandy, well-drained soils, but is adaptable.	fast
<i>Quercus shumardii</i>	Shumard oak	Y	pH- and drought-adaptable.	fast
<i>Sassafras albidum</i>	sassafras	Y	Difficult to transplant. Prefers moist, well-drained soils.	medium
<i>Styphnolobium japonicum</i>	Japanese pagoda	N	Suitable in urban/poor soils. Flowers in summer. Can be messy.	medium/fast
<i>Tilia cordata</i>	littleleaf linden	N	Widely adaptable. Has fragrant flowers in early summer.	medium
<i>Tilia tomentosa</i>	silver linden	N	Tolerates urban conditions.	medium
<i>Ulmus parvifolia</i>	lacebark elm	N	Suitable in urban/poor soils. Has beautiful mottled bark. Do not confuse with Siberian elm, <i>U. pumila</i> .	medium
<i>Ulmus</i> spp.	many cultivars	N	Suitable in urban/poor soils.	fast
<i>Zelkova serrata</i>	zelkova	N	Suitable in urban/poor soils.	medium

Table 1. Continued from page 2.

Indiana Invasive Species				
Scientific Name	Common Name	Invasive Rank ²	Size Group	Growth Rate ³
<i>Pyrus calleryana</i>	callery pear	high	medium tree: >15-30 feet.	fast
Potential Replacement Species				
Scientific Name	Common Name	Native (Y or N)	Special Characteristics	Growth Rate ³
<i>Acer griseum</i>	paperbark maple	N	Suitable in urban/poor soils. Has outstanding cinnamon-brown, peeling bark.	slow
<i>Acer japonicum</i> , <i>A. palmatum</i>	Japanese maple	N	There are many cultivars, some with excellent fall color. Grows best in light shade.	slow
<i>Amelanchier</i> spp.	serviceberry	Y	Prefers moist, well-drained, acid soils. Not good in high-stress environments.	medium
<i>Carpinus betulus</i>	European hornbeam	N	pH-tolerant. Prefers well-drained soils.	slow
<i>Carpinus caroliniana</i>	American hornbeam	Y	Prefers slightly acidic, rich, moist soils.	slow
<i>Cercidiphyllum japonicum</i>	katsura tree	N	pH adaptable. Prefers, moist, well-drained soils.	medium
<i>Cercis canadensis</i>	redbud	Y	pH adaptable. Prefers, moist, well-drained soils.	medium
<i>Chionanthus virginicus</i>	fringetree	Y	Adaptable, but prefers moist, acidic soils. May be susceptible to emerald ash borer.	medium
<i>Cornus alternifolia</i>	pagoda dogwood	N	Prefers moist, well-drained, acidic soils and partial shade. Self seeds.	slow
<i>Cornus kousa</i>	kousa dogwood	N	Prefers moist, well-drained, acidic soils.	Slow
<i>Cornus mas</i>	corneliancherry	N	pH adaptable. Prefers, moist, well-drained soils.	medium
<i>Cotinus coggygria</i>	common smoketree	N	Widely adaptable but prefers well-drained soils.	medium
<i>Cotinus obovatus</i>	American smoketree	Y	Widely adaptable, but is particularly good on alkaline soils.	medium
<i>Crataegus phaenopyrum</i>	Washington hawthorn	Y	Has outstanding fruit display.	medium
<i>Crataegus viridis</i>	green hawthorn	Y	'Winter King' has larger fruits. Is somewhat resistant to rust. Has compact habit.	medium
<i>Halesia carolina</i>	silverbell	Y	Prefers moist, well-drained, acidic soils. Best grown as container rather than balled and bundled.	medium
<i>Maackia amurensis</i>	amur maackia	N	pH-tolerant. Prefers well-drained soils.	slow
<i>Malus</i> sp.	crabapple	N	Widely adaptable, but intolerant of poor drainage. There are numerous cultivars.	fast
<i>Ostrya virginiana</i>	hophornbeam	Y	Prefers moist, well-drained soils, sun or partial shade.	slow
<i>Stewartia</i> spp.	stewartia	Y	Prefers moist, well-drained, acid soils. Afternoon sun is ideal.	slow
<i>Syringa reticulata</i>	Japanese tree lilac	N	Widely adaptable. Flowers best in full sun. Has white flowers in summer.	fast
<i>Ulmus</i> spp.	many cultivars		Suitable in urban/poor soils.	fast

Continued on page 4.

4

Table 1. Continued from page 3.

Indiana Invasive Species				
Scientific Name	Common Name	Invasive Rank ²	Size Group	
<i>Euonymus fortunei</i>	wintercreeper	high	GC	fast
Potential Replacement Species				
Scientific Name	Common Name	Native (Y or N)	Special Characteristics	Growth Rate ³
<i>Asarum canadense</i>	wild ginger	Y	pH adaptable but prefers moist, well-drained, acidic soils Shade-tolerant.	medium
<i>Cotoneaster apiculatus</i>	cranberry cotoneaster	N	pH adaptable. Salt-tolerant.	slow
<i>Cotoneaster horizontalis</i>	rockspray cotoneaster	N	pH adaptable. Prefers full sun or light shade. Good in poor soils.	medium
<i>Parthenocissus quinquefolia</i>	virginia creeper	Y	Widely adaptable. Shade- and salt-tolerant. Adheres to walls. Can be difficult to remove.	fast
<i>Carex</i> spp.	sedge	Y	Low growing. Numerous species and varieties. Suitable for wet, dry, or shady areas. Has attractive seed heads.	medium

¹Table sources:

Alvey, A.A. 2013. *Finding alternatives to invasive ornamental plants in New York*. Cornell University Cooperative Extension. 134 pgs.

Dirr, M.A. 1998. *Manual of woody landscape plants*. Stipes Publishing. 1187 pgs.

Gilman, E.F. 1997. *Trees for urban and suburban landscapes*. Delmar Publishers. 662 pgs.

²Indiana Invasive Species Council (www.entm.purdue.edu/iisc/plants.php) ratings.

³The growth rates listed are general. A plant's growth rate is environmentally sensitive relative to urban, suburban, and rural growth conditions. Rates are faster and sizes larger in areas with less stress and disturbed soils.

Find Out More

Other publications in the *Commercial Greenhouse and Nursery Production* series are available from the Purdue Extension Education Store, www.edustore.purdue.edu.

Continued from page 1.

1. In some situations, a native plant is not the best choice due to environmental conditions, size, fruit characteristics, etc.
2. Some native plants are more difficult to cultivate than a similar non-native.

This publication was reviewed by representatives from Purdue University, Indiana Nursery and Landscape Association, Indiana Arborist Association, The Nature Conservancy of Indiana, Indiana Department of Natural Resources, and Indiana Native Plant and Wildflower Society.

Reference in this publication to any specific commercial product, process, or service, or the use of any trade, firm, or corporation name is for general informational purposes only and does not constitute an endorsement, recommendation, or certification of any kind by Purdue Extension. Individuals using such products assume responsibility for their use in accordance with current directions of the manufacturer.

Apr. 2015

It is the policy of the Purdue University Cooperative Extension Service that all persons have equal opportunity and access to its educational programs, services, activities, and facilities without regard to race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability or status as a veteran.

Purdue University is an Affirmative Action institution. This material may be available in alternative formats.