



CHOOSING SUSTAINABLE PLANTS

Over the years, I have observed that many people use various criteria when selecting or purchasing plants. For many people, the primary criterion is cost – “the lower, the better”. For some, it is all about the spring flowers or a beautiful plant seen in a garden or in the neighborhood. For a plant collector, the words “new”, “rare” or “variegated” may be all that it takes to make that plant selection. I have, myself, used all the above criteria at one time or another.

However, in recent years, the emphasis in our society is on sustainability, whether it is in building construction, energy, food production, etc. and we are seeing an increased interest in selecting landscape plants that are sustainable. The definition of a sustainable plant may be a plant that does not have a known significant insect or disease problem, is drought tolerant (once established), is not invasive, and is long-lived. Selecting plants with the qualities listed above may contribute to developing sustainable landscapes or landscapes that require fewer inputs such as pesticides, water, fertilizer, labor, maintenance and plant replacement.

With literally thousands of plants to choose from, developing sustainable landscapes that are dynamic, beautiful and satisfying can be achieved. A key to selecting a sustainable plant is to follow some basic guidelines. The first guideline is to “plant the right plant, in the right location.” In other words, conduct a site evaluation and determine what plants would do well in that location. In order to do that, we need to know the following:

- **Ultimate height and width of the plant:** How big will the plant grow? Is there enough space or will it outgrow the location?
- **Sunlight:** What does the plant require? Is there enough light to sustain the plant? Is there too much sunlight?
- **Drainage:** Is the soil well drained? Is it too well drained?
- **Pest resistance:** Is the plant prone to a particular or serious insect or disease problem that would require frequent pesticides to maintain its life?
- **Drought tolerance:** Is the plant drought tolerant, once it is established?
- **Hardiness:** Will the species survive the cold, winter temperatures in that location? What hardiness zone is it listed for?
- **Invasive potential:** Does the plant produce seed in a way that may cause it to become invasive? Is the plant known to be invasive?
- **Soil type/soil pH:** Is the soil type and pH conducive to good growth for that plant?
- **Maintenance needs:** Is the plant a weak grower that will require frequent pruning, etc.
- **Longevity:** Is the plant species known to be long-lived?

Selecting plants for sustainability is not complicated and time-consuming. There are numerous plant lists found through University Extension programs as well as online at various web sites. Nursery catalogs also often produce useful lists.

The following lists are but a small fraction of the plants available that have few insect or disease problems, are often long-lived, drought tolerant or may contribute to wildlife habitat. The lists do contain introduced plants as well as North American indigenous species (plants marked with an * are indigenous to North America). When selecting plants, it is highly recommended to plant a diversity of plant species and to avoid the overplanting of one species, thus creating a monoculture. Increasing plant diversity often results in the increase of beneficial insect biodiversity, and that is a good thing.

SUSTAINABLE ALTERNATIVES TO INVASIVE PLANTS

Invasive species

Acer platanoides - Norway maple

Acer pseudoplatanus - Sycamore maple

Alternatives:

Hardiness Zone

* <i>Acer rubrum</i> - Red maple	Z 3
* <i>Acer saccharum</i> - Sugar maple	Z 4
* <i>Cladrastis kentukea</i> - American Yellowwood	Z 4
<i>Ginkgo biloba</i> - Ginkgo	Z 4
* <i>Liriodendron tulipifera</i> - Tuliptree; Tulip poplar	Z 4
* <i>Oxydendron arboreum</i> - Sourwood Tree	Z 5
* <i>Quercus palustris</i> - Pin Oak	Z 4

Invasive species

Berberis thunbergii - Japanese barberry

Berberis vulgaris – European barberry

Alternatives:

* <i>Ilex verticillata</i> - Winterberry	Z 3
* <i>Itea virginica</i> - Virginia sweetspire	Z 5
* <i>Morella (Myrica) pensylvanica</i> - Northern Bayberry	Z 3
* <i>Fothergilla gardenii</i> - Dwarf Fothergilla	Z(4)5
* <i>Itea virginica</i> - Virginia sweetspire	Z 5

Invasive species

Euonymus alatus - Winged Euonymous, Burning bush

Alternatives:

* <i>Aronia arbutifolia</i> - Red Chokeberry	Z 3
* <i>Clethra alnifolia</i> - Sweet Pepperbush (Summersweet)	Z 4
* <i>Cotinus obovatus</i> - American Smoketree	Z 5
* <i>Hydrangea quercifolia</i> - Oakleaf hydrangea	Z 5
* <i>Itea virginica</i> - Virginia sweetspire	Z 5
* <i>Morella (Myrica) pensylvanica</i> - Northern Bayberry	Z 3
* <i>Rhus copallina</i> - Flameleaf sumac; Shining Sumac	Z 4
* <i>Rhus typhina</i> ‘Laciniata’ - Cutleaf Staghorn Sumac;	Z 4
* <i>Vaccinium corymbosum</i> - Highbush Blueberry	Z 3

Invasive species

Elaeagnus umbellata – Autumn olive

Alternatives:

* <i>Aronia arbutifolia</i> - Red Chokeberry	Z 4
* <i>Fothergilla gardenii</i> - Dwarf Fothergilla	Z (4)5
* <i>Fothergilla major</i> - Large Fothergilla	Z 4
* <i>Ilex glabra</i> - Inkberry	Z 5
* <i>Ilex verticillata</i> - Winterberry	Z 3
* <i>Morella (Myrica) pensylvanica</i> - Northern Bayberry	Z 3

Invasive species

Rosa multiflora - Multiflora Rose

Alternatives: Numerous disease resistant landscape roses

Invasive Vines:

- Celastrus orbiculatus* - Oriental bittersweet
- Lonicera japonica* - Japanese honeysuckle
- Ampelopsis brevipedunculata* - Porcelain-berry vine

Alternatives:

- * *Aristolochia macrophylla* (durior) - Dutchman's pipe Z 4
- * *Campsis radicans* - Trumpet vine Z 4
- Clematis montana* - Anemone clematis Z 5
- * *Lonicera sempervirens* - Trumpet honeysuckle Z(3)4
- * *Parthenocissus quinquefolia* - Virginia Creeper; Woodbine Z 4
- * *Wisteria frutescens* - American wisteria Z 5

Invasive species:

- Lythrum salicaria* – Purple Loosestrife

Alternatives:

- * *Agastache foeniculum* – Blue giant hyssop Z 5
- * *Eupatorium purpurium* - Joe-pye weed Z 4
- * *Echinacea purpurea* – Purple coneflower Z 3
- * *Liatris spicata* – Blazing star Z 3
- * *Monarda didyma* – Beebalm Z 4

Invasive species:

- Phalaris arundinacea* – Reed canary-grass

Alternatives:

- * *Schizachyrium scoparium* - Little bluestem (& cultivars: 'Blaze; 'The Blues')
- Hakonechloa macra* - Japanese Hakone Grass (& cultivars: 'Aureola'; 'All Gold; 'Variegata')

ASIAN LONGHORNED BEETLE

In North America, Asian Longhorned Beetle (ALB) has been reported on a number of trees. The observed ALB preferred host trees and the occasional ALB host trees are listed below. There is ongoing research as to which other trees may be considered ALB host trees, so the suggested ALB host tree alternative list may likely change, as a result of this research. A key to creating sustainable landscapes is to embrace diversity and to avoid planting the same species repeatedly, thus avoiding creation of a monoculture.

ALB HOST TREES TO DATE:

Preferred Hosts in U.S.

These plants should not be planted in an ALB quarantine zone.

- Acer* spp. - Maple
- Aesculus* spp.- Horsechestnut
- Betula* spp. – Birch
- Cercidiphyllum japonicum* - Katsuratree
- Salix* spp. – Willow
- Ulmus* – Elm

Occasional Hosts in U.S.

- Albizia julibrissin* – Mimosa
- Fraxinus* spp.- Ash (especially
- F. pennsylvanica* - Green ash)
- Platanus acerifolia*- London Planetree
- Populus* spp.- Poplar
- Sorbus* spp. - Mountain Ash

Suggested Replanting Alternatives for ALB Host Trees:

- * *Amelanchier* sp. - Serviceberry
- * *Chionanthus virginicus* – White Fringetree
- Cornus kousa* – Kousa dogwood
- * *Cornus racemosa* – Gray dogwood
- Corylus colurna* – Turkish Filbert
- Crataegus* spp. – Hawthorn (choose disease resistant cultivars)
- Carpinus betulus* – European hornbeam
- * *Cladrastis kentukea* – American Yellowwood
- Fagus* spp. - Beech
- Ginkgo biloba* – Ginkgo
- * *Halesia montana* – Mountain Silverbell
- * *Halesia tetraptera* – Carolina silverbell
- Koelreuteria paniculata* – Goldenraintree
- * *Liriodendron tulipifera* – Tulip tree
- Magnolia* spp.
- Malus* spp. – Crabapple
- Metasequoia glyptostroboides* – Dawn Redwood
- * *Nyssa sylvatica* – Tupelo/Blackgum
- * *Ostrya virginiana* – American hornbeam
- Stewartia* spp.
- Syringa reticulata* – Japanese lilac
- * *Taxodium distichum* – Baldcypress
- Zelkova serrata* - Japanese zelkova

Conifers:

- Juniperus* spp. – Disease resistant species & cultivars
- * *Juniperus virginiana* – Eastern Redcedar
- Picea omorika* – Serbian Spruce
- Pinus sembra* – Swiss Stone Pine
- Pinus parviflora* – Japanese white pine
- * *Pinus strobus* – White pine
- * *Thuja occidentalis* – American Arborvitae
- * *Thuja plicata* – Western Arborvitae

VIBURNUM LEAF BEETLE IS NOW ESTABLISHED IN MASSACHUSETTS

VIBURNUMS MOST RESISTANT TO THE VIBURNUM LEAF BEETLE

Just because a species is listed as most resistant doesn't mean that it won't be infested.

- V. x bodnantense* - Dawn viburnum
- V. carlesii* - Koreanspice viburnum
- V. davidii* -David viburnum
- V. x juddii* - Judd viburnum
- V. plicatum* var. *tomentosum* - Doublefile viburnum
- V. rhytidophyllum* - Leatherleaf viburnum
- V. setigerum* -Tea viburnum
- V. sieboldii* -Siebold viburnum

PARTIAL LIST OF SUSTAINABLE TREES & SHRUBS

(NOT ALREADY LISTED ABOVE)

Deciduous Trees:

Hardiness Zone

<i>Acer griseum</i> - Paperbark maple	Z 5
<i>Acer trilobum</i> - Three-flower Maple	Z 5
* <i>Betula nigra</i> - River birch	Z 5
* <i>Carpinus caroliniana</i> - American Hornbeam	Z 2
<i>Cercidiphyllum japonicum</i> - Katsuratree	Z 4
<i>Cornus x rutgersensis</i> hybrids - the Stellar™ series	Z 5
<i>Magnolia</i> 'Elizabeth'	Z 4
<i>Malus</i> spp. (disease resistant cultivars)	Z 5
* <i>Ostrya virginiana</i> - American Hophornbeam: Ironwood	Z 4
* <i>Oxydendrum arboreum</i> - Sourwood	Z 5
* <i>Taxodium distichum</i> - Common Baldcypress	Z 4

Deciduous Shrubs

* <i>Aesculus parviflora</i> - Bottlebrush buckeye	Z 4
* <i>Comptonia peregrina</i> - Sweetfern	Z 2
<i>Cornus mas</i> - Corneliancherry Dogwood	Z 4
<i>Cotinus coggygria</i> - Common Smokebush	Z 5
<i>Hydrangea paniculata</i> - Panicle Hydrangea	Z 3
* <i>Hydrangea quercifolia</i> - Oakleaf Hydrangea	Z 5
* <i>Hydrangea quercifolia</i> 'Snowflake'	Z 5
<i>Syringa patula</i> 'Miss Kim' - Miss Kim Lilac	Z 4

Evergreen Trees

* <i>Chamaecyparis nootkatensis</i>	Z 4
<i>Chamaecyparis obtusa</i> - Hinoki Falsecypress	Z 5
<i>Chamaecyparis pisifera</i> - Sawara Falsecypress	Z 4
* <i>Pinus strobus</i> 'Fastigiata' - Fastigate white pine	Z 3
* <i>Pinus strobus</i> 'Pendula' - Weeping white pine	Z 3
* <i>Pinus strobus</i> 'Soft Touch' - Soft Touch dwarf white pine	Z 3
<i>Sciadopitys verticillata</i> - Japanese umbrella-pine	Z 5
* <i>Thuja plicata</i> - Western Arborvitae	Z 4

Partial list of Sustainable Perennials:

Perennials for Sun

* <i>Amsonia taberaemontana</i> - Bluestar	Z 5
* <i>Amsonia hubrichtii</i> - Narrow Leaf Bluestar	Z 5
* <i>Baptisia australis</i> - False Blue Indigo	Z 5
* <i>Baptisia alba</i> - White Wild Indigo	Z 5
<i>Calamagrostis x acutiflora</i> 'Karl Foerster' - Feather Reed Grass Karl Foerster (2001 PPA Perennial Plant of the Year)	Z 4
<i>Baptisia</i> hybrids	Z 5
* <i>Coreopsis verticillata</i> 'Moonbeam' (1992 PPA Perennial Plant of the Year)	Z 5
* <i>Echinacea purpurea</i>	
* <i>Eupatorium maculatum</i> - Joe-Pye-Weed (alternative to Purple Loosestrife)	Z 4
* <i>Eupatorium dubium</i> 'Little Joe'	Z 4
* <i>Eupatorium rugosum</i> 'Chocolate' – White Snakeroot	Z 3

<i>Euphorbia polychroma</i> – Cushion spurge (with <i>Euphorbia dulcis</i> 'Chameleon')	Z 4
<i>Geranium</i> ‘Rosanne’ (2008 PPA Perennial Plant of the Year)	Z 5
<i>Geranium macrorrhizum</i> – Bigroot Geranium	Z 3
<i>Hemerocallis</i> – Daylily	Z 3
<i>Ligularia dentata</i> ‘Desdemona’; <i>L.</i> ‘Britt-Marie Crawford’ (afternoon shade for <i>Ligularia</i>)	Z 3
<i>Nepeta</i> spp.	Z 3
* <i>Panicum virgatum</i> - Switch Grass (& cultivars)	Z 5
* <i>Rudbeckia fulgida</i> var. <i>sullivantii</i> ‘Goldsturm’ - Goldsturm Black-eyed Susan	Z 3
(1999 PPA Perennial Plant of the Year)	
<i>Salvia</i> ‘May Night’ (1997 PPA Perennial Plant of the Year)	Z 4
* <i>Schizachyrium scoparium</i> (<i>Andropogon scoparius</i>) – Little Bluestem (& cultivars)	Z 3
<i>Sedum</i> spp.	Z 3
* <i>Yucca filamentosa</i>	Z 5

Perennials for shade:

<i>Alchemilla mollis</i> – Lady’s Mantle	Z 4
* <i>Cimicifuga racemosa</i> (<i>Actaea racemosa</i>) - Black Cohosh; Bugbane	Z 3
<i>Epimedium</i> spp.	Z 5
<i>Hakonechloa macra</i> - Japanese Hakone Grass (& cultivars)	Z 5
<i>Helleborus</i> x <i>hybridus</i> (<i>H. orientalis</i>) - Lenten Rose: (2005 PPA Plant of the Year)	Z 4
<i>Hosta</i>	
<i>Paeonia japonica</i> – Japanese Peony	Z 5
* <i>Phlox divaricata</i> - Woodland Phlox	Z 3
* <i>Phlox stolonifera</i> - Creeping Phlox (1990 Perennial Plant of the Year Winner)	Z 3
* <i>Polygonatum commutatum</i> - Great Solomon’s Seal	Z 3
<i>Polygonatum odoratum</i> ‘Variegatum’ - Variegated Fragrant Solomon’s Seal	Z 3
* <i>Tiarella cordifolia</i> – Foamflower	Z 3

* *Indicates indigenous to North America*

References:

- *Asian Longhorned Beetle: Annotated Host List: Alan Sawyer-USDA-Aphis-PPQ, Otis Pest Survey Detection & Exclusion Laboratory: Revised February 22, 2008*
- *Recommended Tree Planting List for the ALB Quarantine Zone & Surrounding Areas New Jersey Forest Service-November 2004*
- *Alternatives for Invasive Plant Species –September 2004, Edited by Timothy M. Abbey, The Connecticut Experiment Station for the Connecticut Invasive Plant Working Group*
- *Viburnum Leaf Beetle Citizen Science – Susceptibility to infestation, Paul Weston, Department of Entomology, Cornell University, New York*
- *Massachusetts Introduced Pests Outreach Project - <http://massnrc.org/pests/alb/>*
- *Manual of Woody Landscape Plants – Michael A. Dirr*
- *Herbaceous Perennial Plants, Third Edition, Allan M. Armitage*

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