

SUSTAINABLE TREES AND SHRUBS FOR SOUTHERN NEW ENGLAND



Prepared by:

**Richard A. Casagrande, Brian K. Maynard, Roberta A. Clark, Susan H. Gordon,
Kenneth Lagerquist, William A. Green and Angelo E. Simeoni, Jr.**

Second Edition, 1995

Price \$4.00

This study was supported by the funds of USDA Cooperative Agreement #91 COOP-1-6593.

URI, College of Resource Development, Contribution No. 2886.

This list has been compiled by faculty from the University of Rhode Island and the University of Massachusetts Cooperative Extension System, working with local nursery practitioners. We are grateful for the continuing support of the Rhode Island Nurserymen's Association, and its members, in this and other efforts.

We are particularly indebted to the following individuals for their valuable review and contributions to the *List of Sustainable Trees and Shrubs for Southern New England*:

Edward Auger	Forest Hills Nursery, Inc., N. Kingstown, RI
Kris Bachtell	The Morton Arboretum, IL
David Bascom	University of Rhode Island, Kingston, RI
Nina Bassuk	Cornell University, Ithaca, NY
John Campanini	City of Providence, RI
Clem Desjardins	Arborscape, Providence, RI
Glenn Dreyer	Connecticut College Arboretum, New London, CT
Larry Englander	University of Rhode Island, Kingston, RI
Richard Gagne	Gem Evergreen Co., Hooksett, NH
Lisa Gould	RI Wild Plant Society
Robert Gouveia	Jackson Nurseries, MA
Tom Green	The Morton Arboretum, IL
James Hallene	Prides Corner Farm, Inc., Lebanon, CT
Noel Jackson	University of Rhode Island, Kingston, RI
Warren Johnson	Cornell University, Ithaca, NY
Todd Kennedy	The Kennedy Nurseries, Greenwich, CT
David Kmez	Windy-Lo Nursery, Inc., Northboro, MA
Gary Koller	The Arnold Arboretum, Jamaica Plain, MA
John McGuire	University of Rhode Island, Kingston, RI
Wayne Mezzitt	Weston Nurseries, MA
Steve Pagliarini	Central Nurseries, Inc., Johnston, RI
Barbara Petrarca	RIDOT, Providence, RI
Charlotte Smith	Sylvan Nursery, Westport, MA
Deborah Swanson	UMass CE, MA
Floyd Swink	The Morton Arboretum, IL
Bruce Vanicek	The Rhode Island Nurseries

**University of Rhode Island and University of Massachusetts
COOPERATIVE EXTENSION SYSTEMS**

The University of Rhode Island, University of Massachusetts, and the United States Department of Agriculture cooperating. The Universities of Rhode Island and Massachusetts offer affirmative action and equal opportunity in programs and employment.

Sustainable Trees and Shrubs for Southern New England

INDEX	PAGES
An Introduction to the Sustainable Plant List	i - ii
Planting for Sustainable Landscapes	iii - v
Index of Common Names	vi - viii
List of Sustainable Trees and Shrubs	1 - 17
Appendix 1: URI Crabapple Tree Disease Evaluations: 1992-1993	18
Appendix 2: Trees and Shrub Selections for Demanding Situations	19-23
<u>Hardiness Map of New England (USDA Plant Hardiness Zones)</u>	<u>inside back cover</u>

AN INTRODUCTION TO THE SUSTAINABLE PLANT LIST

Plant lists are invaluable resources for garden enthusiasts, designers, nursery trades people and landscape architects. We constantly consult books and nursery catalogs which list landscape plants, especially those that organize plants by their characteristics and landscape uses. As times and fashions change, new plants emerge, old plants are rediscovered, and others lose favor and disappear from these lists. But one point remains clear: listing plants encourages their widespread distribution and use. The purpose of this publication is to encourage the production and use of landscape plants that are more sustainable: those which require reduced inputs of pesticides, water, and maintenance and are not invasive.

Why Sustainable?

Not long ago, plants from around the world could be introduced into the landscape and provided with the care needed to ensure their long-term beauty and success. Pesticide use was widespread and its effectiveness unquestioned, labor for intensive care was available and affordable, and the supply of natural resources was considered limitless. Much has changed in recent decades and we have become painfully aware of the limits of our natural resources and the precarious balance of nature in which we play a pivotal role. Many in our society are looking for ways to reduce our impacts on the environment. Others lack the time or resources to manage pests or maintain shrubs that require frequent pruning or irrigation. These people should find the sustainable plant list an invaluable resource. Careful plant selection is the key first step in developing a balanced and self-perpetuating landscape. However, plant survival with minimal maintenance is not the only issue in sustainability. We are having increased difficulties with invasive exotic plants which have escaped from managed landscapes, displacing native plants and disrupting natural ecosystems. Use of these potential invasives cannot be seen as sustainable except in very controlled situations.

This list of sustainable plants is not offered as the entire answer. Proper siting and planting also is necessary for a plant to prosper in the landscape. Therefore, climatic conditions, exposure to sun and wind, subsurface soil and moisture conditions, etc. must be considered when selecting

plants for a particular location. Sustainable or not, if one ignores the site and a plant's cultural requirements, that plant will suffer.

A List for Professionals

In preparing this list and the accompanying plant descriptions, we have targeted a professional audience with an expectation that through time, as these plants become more available, this information will filter down to the consumers. To maximize distribution and facilitate revisions, we have kept the price of this publication low by avoiding illustrations. Plants on this list are proven performers in Southern New England (USDA Hardiness Zones 7a - 5b) and many of them can be grown both north and south of here (although the pest complexes might change). This list is dynamic - presently in its third revision, and it will continue to change as new plants and pests are introduced and we learn more about existing ones.

The list is only a guide. Plants are included on this list which have qualities appealing to designers and plant lovers alike. Plant descriptions include color, form, texture, and growth habits as well as maintenance requirements and hardiness. Many of the plants on the list are well known and currently under production while others need to be grown and distributed more. We are well aware that it will take a decade or more before some of the newer plants are readily available in the trade.

Many of our favorite plants are not on the list because serious pests threaten their existence or their maintenance requirements are too high for them to be considered sustainable. That doesn't mean that we won't include a few of them in our landscapes. Life would be dull, indeed without a rose, but none of us would want to maintain a half-acre of them. Plants with occasional pest problems or those with relatively minor problems are included on the list with cautionary notes. It is only those plants with life-threatening or chronic pest problems that are omitted from the list, along with seriously invasive species. The list is not intended to eliminate the production of high maintenance plants with desirable traits. Instead, it is intended to encourage the broader distribution of plants which seem to be better suited to satisfying not only our horticultural requirements, but also our environmental concerns.

Native Plants

There is renewed interest in native plants (those found growing outside of cultivation in this region during pre-Colonial times), which often are better acclimated, less pest prone, and more favorable for native wildlife than exotic plants. Native plants are identified in Appendix 2. However, it should be noted that many exotic insect and disease pests have been introduced in the past 300 years. They have virtually eliminated some of our native plants and become serious pests of others. In these cases it is useful to look to other parts of the world where plants have evolved resistance to these pests. Even without introduced pests, some native plants have problems in our landscapes where they are far removed from their natural environments. A fabulous forest shrub can have serious difficulties when sited between a driveway and a sidewalk. It is likely that a sustainable landscape will feature many native plants, but we think there are many non-natives which should be considered as well.

PLANTING FOR SUSTAINABLE LANDSCAPES

INTRODUCTION

Giving plants a healthy start begins with proper planting. Problems showing up on established plants more often than not can be traced back to poor planting. Traditional ways of planting are often passed down through generations of landscapers. While some of the old ways are still recommended today, many planting practices are changing to reflect current research and technology. Well-informed landscapers and arborists should be aware of the latest planting and transplanting techniques. The objective of this chapter is to have you learn the techniques and procedures used to plant and transplant trees and shrubs, and to have you understand how the use of proper planting techniques can improve survival and accelerate establishment.

SELECTING AND PURCHASING PLANTS

The Right Plant

A key to sustainable planting is matching the plant and the conditions of the planting site. The best planting procedures known will not save a plant that is poorly suited for its site. Plants naturally vary in their ability to tolerate site conditions such as extreme heat or cold, wet or dry soils, sun or shade. The plant also should not outgrow its allotted space. Plants should be healthy and vigorous when planted. The condition of the roots in particular affects transplant success. The roots should be white and numerous; brown or black roots indicate a health problem.

Handling New Plants

Trees and shrubs are available from the nursery in one of three forms; bare root, balled and burlapped or container-grown. Depending upon site requirements and planting specifications, each form has its advantages and disadvantages.

Bare root plants have had the soil shaken from their roots after digging. Most bare trees and shrubs plants are purchased by mail order and planted during the dormant season, before roots and buds begin to grow. Since there is no soil on the roots, it is vital that they be kept moist, and if not planted immediately, that they be stored cold (32°-40°F), with moist packing around the roots. When planted, the roots of bare root plants should be spread evenly in the planting hole.

Container-grown plants have been grown for months or years in the container in which they are sold. Container-growing is becoming very popular in the nursery trade. Container-grown plants may be planted anytime the soil is workable, but may need special attention to correct compacted or circling roots. When selecting container-grown trees and shrubs, always check the roots. For example, not all plants purchased in containers are container-grown. Often bare root trees or shrubs are potted in containers, grown on for a short time and sold from the nursery. If they are not held for at least a year, the roots may not have established in the container. On the other hand, if plants are grown in their container for too long, the roots may have grown in circles. These roots must be separated and spread out during planting. If the roots are densely matted, the outside of the root mass should be sliced vertically with a sharp knife in a few places to help separate the roots. And unless the container is biodegradable, such as a natural peat pot, it must be removed before planting.

If properly watered and maintained, container-grown trees can be planted any time of the year. Early fall planting is especially advantageous because the roots can begin to establish before the plant goes dormant for winter. Early spring, before bud break, is also a good time to plant because the roots begin to grow immediately, and light, temperature and soil moisture levels are optimal. Perhaps the most important factor in successfully transplanting container-grown trees is maintaining adequate soil moisture, which encourages roots to grow into the surrounding soil.

Many trees and shrubs are dug in the nursery with root balls intact, and wrapped with burlap. Be aware that as much as 95% of the absorbing roots can be lost in digging, though some roots are preserved in the root ball. When selecting a balled and burlapped plant be sure the ball is solid, with little or no movement of the trunk. The burlap used to wrap the root ball holds the soil ball together and keeps the roots from drying out. Natural fiber burlap is biodegradable, and may be left in the hole, though it should be rolled back and completely covered with soil. Some nurseries use treated burlap or synthetic burlap, this should be removed at planting. All twine or rope holding the burlap together or tied around the trunk must be removed to avoid girdling. Some larger balled and burlapped trees come in wire baskets that keep the ball together during handling. Although the baskets do not have to be removed, it is best to cut the upper rows when planting. This eliminates interference with rakes or lawn mowers if the tree is planted shallow, and allows roots to grow and spread freely near the surface.

PLANTING

The Planting Hole

Installing trees and shrubs properly involves more than just digging holes and setting in plants. The quality of the planting hole will determine the long term health of the root system, and thereby the entire plant. In general, the planting hole should be at least 18 to 24 inches wider in diameter than the root ball. If the soil is compacted, or of poor quality, the hole should be even larger - 3 to 5 times the width of the root ball. The hole should be wider at the top than the bottom, with sloped walls, because most of the root growth will be shallow and horizontal. Planting too deeply can stress the plant and drown or suffocate the roots. The easiest way to avoid this is never to dig the hole deeper than the root ball. Soft fill should not be left in the bottom of the hole, as the root ball will settle and be planted too deep. In almost all types of soil, the tree should be planted slightly shallow, with the top 2-4 inches of the root ball sitting above the surrounding soil grade. Remember, the exposed portion of the root ball will be covered with 2-3 inches of mulch by the time you are finished planting.

Drainage is also an important consideration in successful planting. Poor drainage kills more plants than any other cause. A poorly prepared planting hole may act as a dish and hold water, especially in clay soils. Oxygen levels are low in the bottom of such holes, and not conducive to healthy root growth. Do not put gravel in the bottom of the planting hole; it does not aid drainage.

The Root Ball

Handle roots carefully during planting - small absorbing roots are easily broken. Check balled and burlapped plants to ensure the roots originate near the surface of the ball. When setting the plant in the hole, make sure these roots are no deeper than the soil grade.

Backfilling

In most cases it is best to backfill the hole with the same soil that came out of the hole. Research has shown that soil amendments do not improve plant establishment or growth. However, if the natural soil is extremely poor, topsoil may be the only alternative. Strive to match the backfill soil type to the soil type of the site, as closely as possible. Backfilling with a sandy loam in heavy clay soils may cause the planting hole to collect water and suffocate the roots. If soil must be brought to the site, or the backfill must be amended, the hole should be extra wide. This will allow for several years growth within the new soil. While backfilling, work the soil around the ball so that no air pockets remain. Large pockets of air can allow roots to dry out. Firm the soil so that the plant is vertical and adequately supported, but do not pack the soil. Water thoroughly while backfilling. The remaining soil should be mounded into a berm, on the outer edge of the hole, to collect water over the root zone, especially on sloped sites. Remove all tags or labels so that they will not girdle the trunk or branches as the plant grows.

Mulching

After filling the planting basin with water and letting it drain, fill the basin with 2 to 3 inches of an organic mulch. This will conserve soil moisture, moderate soil temperature extremes and reduce competition from weeds and turf. Many organic mulches, such as pine needles, bark or wood chips, are fine. Make certain the mulch is not touching the plant stem, as this could promote bark decay, crown rot, winter injury and rodent damage. Do not use black plastic or landscape fabric under the mulch, since these materials, sooner or later, restrict water movement and oxygen availability to the roots.

Water and Fertilizer

Planting is a major operation from which most trees and shrubs recover slowly. A major portion of the root system is lost in digging, and the plant must reestablish sufficient roots to sustain itself. In this time, the plant's ability to obtain and transport water and minerals is greatly reduced. The result are varying degrees of water stress and transplant shock. For this reason, proper watering is a key to the survival of newly planted trees and shrubs. If rainfall is not sufficient (generally 1 inch/week), the tree should be watered every five to seven days. A slow gentle soaking of the root zone is preferable. Your watering patterns should be appropriate for the soil type and drainage - remember that excess water in the planting hole is a leading cause of transplant death.

Since the root system functions of a newly planted tree are limited, fertilization often is not recommended at the time of planting. Excessive fertilizer in the root zone can be damaging, so do not add fertilizer to the backfill. If fertilizer must be used at planting or in the first growing season, apply a controlled-release fertilizer or liquid feed. Fertilizing in the fall, when the roots are active, can be beneficial. However, most plants received from the nursery require no fertilizer in the first year of establishment.

Pruning

Plants grow and establish fastest if pruning is minimized at planting. Beyond the removal of broken or damaged branches, it is usually best to avoid heavy pruning.

Staking and Guying

Most shrubs do not need to be supported after planting. In general, trees under 8 feet in height do not need support either. In fact, staking can have detrimental effects on the development of trunk taper and root growth. Too often, staking materials end up injuring or girdling the tree.

Trees may be supported by up to three stakes. If a single stake is used, it should be placed on the upwind side of the tree. The material used to attach the tree to the stake should be broad, smooth and somewhat elastic. The tree may be attached to the stake at several points along the trunk. However, do not stake the tree too rigidly, as the tree will develop a less sturdy root system and be more subject to girdling. If two support stakes are used, a single, flexible tie attached to the tops of the stakes will be sufficient. Triple staking provides more protection against strong wind and lawn mowers. Support stakes and guy wires generally should be removed after one growing season. If staking is left in place for more than two years the tree's ability to stand alone may be reduced, and the chances of girdling injury are increased.

Based on information found in the International Society for Arboriculture Arborist's Certification Study Guide, the Penn State University Master Gardener Manual, and Arboriculture: Integrated Management of Landscape Trees, Shrubs, and Vines, by Richard W. Harris.

- Alaska-cedar *Chamaecyparis nootkatensis*
Alder, Black or Common *Alnus glutinosa*
Alder, Speckled *Alnus rugosa*
Alder, White *Alnus incana*
Amur Chokecherry *Prunus maackii*
Amur Corktree *Phellodendron amurense*
Amur Maackia *Maackia amurensis*
Aralia, Fiveleaf *Acanthopanax sieboldianus*
Arborvitae, Giant or Western *Thuja plicata*
Arborvitae, Russian *Microbiota decussata*
Atlantic Whitecedar *Chamaecyparis thyoides*
Aucuba, Japanese *Aucuba japonica*
Azalea *Rhododendron* species
Baldcypress *Taxodium distichum*
Barberry, Mentor *Berberis x mentorensis*
Barberry, Warty *Berberis verriculosa*
Barberry, William Penn *Berberis gladyensis*
Barberry, Wintergreen *Berberis julianae*
Bayberry, Northern *Myrica pensylvanica*
Beach Plum *Prunus maritima*
Bearberry / Kinnikinnick *Arctostaphylos uva-ursi*
Beautyberry, Purple *Callicarpa dichotoma*
Beautybush *Kolkwitzia amabilis*
Beech, European *Fagus sylvatica*
Birch, River *Betula nigra*
Blueberry, Highbush *Vaccinium corymbosum*
Buckeye, Bottlebrush *Aesculus parviflora*
Buckeye, Red *Aesculus pavia*
Burning Bush *Euonymus alatus*
Carolina Allspice *Calycanthus floridus*
Carolina Silverbell *Halesia carolina*
Castor-aralia *Kalopanax pictum*
Chenault Coralberry *Symphoricarpos x chenaulti*
Cherry, Higan *Prunus subhirtilla*
Cherry, Sargent *Prunus sargentii*
Chokeberry, Black *Aronia melanocarpa*
Chokeberry, Red *Aronia arbutifolia*
Cinquefoil, Bush *Potentilla fruticosa*
Clethra, Japanese *Clethra barbinervis*
Clethra, Summersweet *Clethra alnifolia*
Coralberry, Chenault *Symphoricarpos x chenaulti*
Corktree, Amur *Phellodendron amurense*
Cornelian-cherry *Cornus mas*
Cotoneaster, Creeping *Cotoneaster adpressus*
Cotoneaster, Spreading *Cotoneaster divaricatus*
Cotoneaster, Willowleaf *Cotoneaster salicifolius*
Crabapple *Malus* species
Deutzia, Fuzzy *Deutzia scabra*
Deutzia, Slender *Deutzia gracilis*
Devil's Walking Stick *Aralia spinosa*
Dogwood, Cornelian-cherry *Cornus mas*
Dogwood, Gray *Cornus racemosa*
Dogwood, Japanese Cornel *Cornus officinalis*
Dogwood, Kousa *Cornus kousa*
Dogwood, 'Stellar' hybrids *Cornus x 'Stellar'* series
Douglasfir *Pseudotsuga menziesii*
Eastern Red Cedar *Juniperus virginiana*
Elm, Lacebark *Ulmus parvifolia*
Enkianthus, Redvein *Enkianthus campanulatus*
Epaulettetree, Fragrant *Pterostyrax hispida*
Falsecypress, Hinoki *Chamaecyparis obtusa*
Falsecypress, Sawara *Chamaecyparis pisifera*
Filbert, Turkish *Corylus colurna*
Fir, Cilician *Abies cilicica*
Fir, Nikko *Abies homolepis*
Fir, White *Abies concolor*
Forsythia, Border *Forsythia x intermedia*
Forsythia, Weeping *Forsythia suspensa*
Fothergilla, Large *Fothergilla major*
Fringetree, Chinese *Chionanthus retusus*
Fringetree, White *Chionanthus virginicus*
Ginkgo / Maidenhair Tree *Ginkgo biloba*
Golden-larch *Pseudolarix kaempferi*
Goldenraintree *Koelreuteria paniculata*
Hardy Rubber Tree *Eucommia ulmoides*
Hawthorn, Green *Crataegus viridis* 'Winter King'
Hazel, Turkish *Corylus colurna*
Hemlock, Northern Japanese *Tsuga diversifolia*
Hemlock, Western *Tsuga heterophylla*
Hercules Club *Aralia spinosa*
Holly, Chinese *Ilex cornuta*
Holly, English *Ilex aquifolium*
Holly, Inkberry *Ilex glabra*
Holly, Japanese *Ilex crenata*

Holly, Longstalk	<i>Ilex pedunculosa</i>	Maple, Amur	<i>Acer ginnala</i>
Holly, Lusterleaf	<i>Ilex latifolia</i>	Maple, Hedge	<i>Acer campestre</i>
Holly, Blue	<i>Ilex x meserveae hybrids</i>	Maple, Japanese	<i>Acer palmatum</i>
Holly, Sparkleberry	<i>Ilex x 'Sparkleberry'</i>	Maple, Paperbark	<i>Acer griseum</i>
Holly, Winterberry	<i>Ilex verticillata</i>	Maple, Red / Swamp	<i>Acer rubrum</i>
Honeysuckle, Dwarf Bush	<i>Diervilla sessilifolia</i>	Maple, Sycamore	<i>Acer pseudoplatanus</i>
Hoptree	<i>Ptelea trifoliata</i>	Maple, Tatarian	<i>Acer tataricum</i>
Hornbeam, American	<i>Carpinus caroliniana</i>	Maple, Three-flowered	<i>Acer triflorum</i>
Hornbeam, European	<i>Carpinus betulus</i>	Maple, Trident	<i>Acer buergeranum</i>
Hercules Club	<i>Aralia spinosa</i>	Mountain Ash, Korean	<i>Sorbus alnifolia</i>
Hop hornbeam	<i>Ostrya virginiana</i>	Mountain Laurel	<i>Kalmia latifolia</i>
Hydrangea, Bigleaf	<i>Hydrangea macrophylla</i>	Mountain Pieris	<i>Pieris floribunda</i>
Hydrangea, Oak-leaved	<i>Hydrangea quercifolia</i>	Oak, Pin	<i>Quercus palustris</i>
Hydrangea, Panicle	<i>Hydrangea paniculata</i>	Oak, Red	<i>Quercus rubra</i>
Hydrangea, Smooth	<i>Hydrangea arborescens</i>	Oak, Sawtooth	<i>Quercus acutissima</i>
Ironwood / Hop Hornbeam	<i>Ostrya virginiana</i>	Oak, Swamp White	<i>Quercus bicolor</i>
Japanese Plum Yew	<i>Cephalotaxus harringtonia</i>	Oak, White	<i>Quercus alba</i>
Japanese Raisintree	<i>Hovenia dulcis</i>	Oak, Willow	<i>Quercus phellos</i>
Japanese Scholar Tree	<i>Sophora japonica</i>	Parrotia, Persian	<i>Parrotia persica</i>
Japanese Snowbell	<i>Styrax japonica</i>	Pear, Callery	<i>Pyrus calleryana cultivars</i>
Japanese Umbrella Pine	<i>Sciadopitys verticillata</i>	Pearlbush	<i>Exochorda racemosa</i>
Juniper, Chinese	<i>Juniperus chinensis</i>	Pine, Eastern White	<i>Pinus strobus</i>
Juniper, Shore	<i>Juniperus conferta</i>	Pine, Japanese White	<i>Pinus parviflora</i>
Katsura Tree	<i>Cercidiphyllum japonicum</i>	Pine, Korean	<i>Pinus koraiensis</i>
Kentucky Coffee Tree	<i>Gymnocladus dioica</i>	Pine, Swiss Stone	<i>Pinus cembra</i>
Korean Evodia	<i>Evodia daniellii</i>	Plum, Beach	<i>Prunus maritima</i>
Korean Mountain Ash	<i>Sorbus alnifolia</i>	Privet, Amur	<i>Ligustrum amurense</i>
Laurel, Mountain	<i>Kalmia latifolia</i>	Red Cedar, Eastern	<i>Juniperus virginiana</i>
Laurel, Sheep	<i>Kalmia angustifolia</i>	Rhododendron	<i>Rhododendron species</i>
Leyland Cypress	<i>x Cupressocyparis leylandii</i>	Rose, Saltspray	<i>Rosa rugosa</i>
Lilac, Japanese Tree	<i>Syringa reticulata</i>	Serviceberry, Allegheny	<i>Amelanchier laevis</i>
Lilac, Littleleaf	<i>Syringa microphylla</i>	Serviceberry, Downy	<i>Amelanchier arborea</i>
Lilac, Manchurian	<i>Syringa patula 'Miss Kim'</i>	Serviceberry, Shadblow	<i>Amelanchier canadensis</i>
Lilac, Meyer	<i>Syringa meyeri 'Palibin'</i>	Sheep Laurel	<i>Kalmia angustifolia</i>
Maackia, Amur	<i>Maackia amurensis</i>	Smoketree, American	<i>Cotinus obovatus</i>
Magnolia, Cucumbertree	<i>Magnolia acuminata</i>	Smoketree, Common	<i>Cotinus coggygria</i>
Magnolia, Kobus	<i>Magnolia kobus</i>	Sourwood / Sorrel Tree	<i>Oxydendrum arboreum</i>
Magnolia, Loebner	<i>Magnolia x loebneri</i>	Spirea, Bumald	<i>Spiraea x bumalda 'Anthony Waterer'</i>
Magnolia, Saucer	<i>Magnolia x soulangiana</i>	Spirea, Vanhoutte	<i>Spiraea x vanhouttei</i>
Magnolia, Star	<i>Magnolia stellata</i>	Spruce, Oriental	<i>Picea orientalis</i>
Magnolia, Sweetbay	<i>Magnolia virginiana</i>	Spruce, Serbian	<i>Picea omorika</i>
Maidenhair Tree	<i>Ginkgo biloba</i>	Stephanandra, Cutleaf	<i>Stephanandra incisa 'Crispa'</i>

Stewartia, Japanese	<i>Stewartia pseudocamellia</i>
Stewartia, Korean	<i>Stewartia koreana</i>
Sumac, Chinese	<i>Rhus chinensis</i>
Sumac, Fragrant	<i>Rhus aromatica</i>
Sumac, Shining	<i>Rhus copallina</i>
Sweet Fern	<i>Comptonia peregrina</i>
Sweet Pepperbush	<i>Clethra alnifolia</i>
Sweetgum	<i>Nyssa sylvatica</i>
Tupelo	<i>Nyssa sylvatica</i>
Umbrella Pine, Japanese	<i>Sciadopitys verticillata</i>
Viburnum, American Cranberrybush ..	<i>Viburnum trilobum</i>
Viburnum, Arrowwood	<i>Viburnum dentatum</i>
Viburnum, Blackhaw	<i>Viburnum prunifolium</i>
Viburnum, Carlcephalum / Fragrant ..	<i>Viburnum x carlcephalum</i>
Viburnum, Doublefile	<i>Viburnum plicatum f. tomentosum</i>
Viburnum, Fragrant	<i>Viburnum farreri</i>
Viburnum, Judd	<i>Viburnum x juddii</i>
Viburnum, Lantanaphyllum	<i>Viburnum x rhytidophylloides</i>
Viburnum, Leatherleaf	<i>Viburnum rhytidophyllum</i>
Viburnum, Sargent	<i>Viburnum sargentii</i>
Viburnum, Siebold	<i>Viburnum sieboldii</i>
Viburnum, Wayfaringtree	<i>Viburnum lantana</i> 'Mohican'
Viburnum, Wright	<i>Viburnum wrightii</i>
Sweetspire, Virginia	<i>Itea virginica</i> 'Henry's Garnet'
Weigela, Flowering	<i>Weigela florida</i>
Witchhazel, Chinese	<i>Hammamelis mollis</i>
Witchhazel, Common	<i>Hammamelis virginiana</i>
Witchhazel, Vernal	<i>Hammamelis vernalis</i>
Yellowroot	<i>Xanthorhiza simplicissima</i>
Yellowwood	<i>Cladrastis lutea (kentukea)</i>
Yew, Anglojap	<i>Taxus x media</i> cultivars
Yew, English	<i>Taxus baccatta</i> 'Repandens'
Yew, Japanese	<i>Taxus cuspidata</i>
Zelkova, Japanese	<i>Zelkova serrata</i>

SUSTAINABLE TREES AND SHRUBS FOR SOUTHERN NEW ENGLAND

- | | | | |
|---|------------------------|-----------------|------------------------------|
| <i>Abies cilicica</i> | Cilician Fir | zone 5-7 | 60-70' x 20-30' |
| <hr style="border: 0.5px solid black;"/> | | | |
| Tolerates heavy clay soils, cold temperatures. | | | |
| <i>Abies concolor</i> | White Fir | zone 4-7 | 30-50' x 15-30' |
| <hr style="border: 0.5px solid black;"/> | | | |
| Moist, well drained, sandy-gravelly loams, tolerates heat, drought, cold, intolerant of wet soils. Full sun preferred. Blue-gray needle color, gray to purple upright cones. | | | |
| <i>Abies homolepis</i> | Nikko Fir | zone 5-6 | 30-50' x 20-30' |
| <hr style="border: 0.5px solid black;"/> | | | |
| Moist, well drained soil, pH adaptable, little maintenance required. | | | |
| <i>Acanthopanax sieboldianus</i> | Fiveleaf Aralia | zone 4-8 | 8-10' x 8-10' |
| <hr style="border: 0.5px solid black;"/> | | | |
| Easily transplanted, withstands adverse conditions, tolerates dry soils, urban tolerant, tolerates clay-sand-acid soils, sun-shade. Suckers readily: may be maintenance problem if not sited correctly and allowed ample room; thorny. | | | |
| <i>Acer buergerianum</i> | Trident Maple | zone 6-8 | 20-25' x equal spread |
| <hr style="border: 0.5px solid black;"/> | | | |
| Well drained, acid soil; good drought resistance, full sun. Good under utility lines. Attractive bark on mature specimens. | | | |
| <i>Acer campestre</i> | Hedge Maple | zone 5-8 | 25-35' x equal spread |
| <hr style="border: 0.5px solid black;"/> | | | |
| Adaptable species, prefers average garden soils but tolerates dry conditions and compaction, acid-alkaline, sun-light shade, withstands shearing. Good under utility lines. | | | |
| <i>Acer ginnala</i> | Amur Maple | zone 2-8 | 15-25' x equal spread |
| <hr style="border: 0.5px solid black;"/> | | | |
| Moist, well drained soils but adaptable to wide range of conditions, sun-shade, tolerates shearing. Usually multi-stemmed but can be purchased as a single stemmed specimen; can also be grown as a container specimen. Good under utility lines. Potentially invasive. | | | |
| <i>Acer griseum</i> | Paperbark Maple | zone 5-8 | 20-30' x equal spread |
| <hr style="border: 0.5px solid black;"/> | | | |
| Full sun-partial shade, moist well drained soils. Relatively maintenance free. Outstanding cinnamon colored exfoliating bark and red-scarlet fall foliage offer year round interest in the landscape. Slow growing. | | | |
| <i>Acer palmatum</i> | Japanese Maple | zone 5-8 | 15-25' x variable |
| <hr style="border: 0.5px solid black;"/> | | | |
| Moist, well drained soils high in organic matter, full sun to dappled shade, dissectum types scorch in full sun if drought stressed. Sited properly, this is an excellent low maintenance plant. Red leaf forms seem to be somewhat more hardy and stress tolerant than the green leaf forms. | | | |
| <i>Acer pseudoplatanus</i> | Sycamore Maple | zone 4-7 | 40-60' x equal spread |
| <hr style="border: 0.5px solid black;"/> | | | |
| Adaptable to soil types, very salt and wind tolerant, excellent for coastal areas, full sun-light shade. Coarse textured dark green leaves with no fall color. Several improved cultivars available. Potentially invasive. | | | |

<i>Acer rubrum</i>	Swamp/Red Maple	zone 3-9	40-60' x equal spread
Tolerates most soils but prefers moist, acid conditions, excellent for wet conditions. An important tree for urban landscapes; in full sun it will develop clear red fall foliage; many excellent cultivars available, e.g. 'October Glory', 'Red Sunset'.			
<i>Acer tataricum</i>	Tatarian Maple	zone 3-8	20' x equal spread
Adaptable to a wide range of conditions, drought tolerant once established, sun-light shade. Similar to <i>A. ginnala</i> in attributes.			
<i>Acer triflorum</i>	Three-flowered Maple	zone 5-7	20-30' x equal spread
Moist, acid soils, full sun-partial shade. A good small tree with exfoliating bark, the trifoliate leaves develop a warm yellow to red color in the fall. Good for many different landscape uses.			
<i>Aesculus parviflora</i>	Bottlebrush Buckeye	zone 4-8	8-12' x 8-15'
Moist, well drained soil with high organic matter, drought intolerant, pH adaptable, prefers acid, sun-shade. Large white flowers are formed in July, overall growth habit is clumping, as it suckers readily from the base. Good yellow fall color.			
<i>Aesculus pavia</i>	Red Buckeye	zone 5-8	20/25' x equal spread
Moist, well drained soils, full sun/light shade, red flowers in 4"- 8" panicles in mid spring. Dark green leaves with no appreciable fall color; early fall abscission. Less prone to leaf scorch than <i>A. hippocastanum</i> but subject to blotch. Variability in flower color in the species, 'Atrosanguinea' has consistent deep red flowers.			
<i>Alnus incana</i>	White Alder	zone 3-6	40/60' x 20/40'
<i>A. glutinosa</i>	Common or Black Alder		
Moist to wet soils, full sun/light shade, pH tolerant, does well on infertile sites as it fixes nitrogen. Several cultivars available, including 'Aurea' with yellow leaves and 'Laciniata', a bright green cut-leaf form. Especially useful for wet or naturalized areas. <i>Alnus rugosa</i> (Speckled Alder) is a native shrub that reaches 15/20' and is useful for wetland plantings. Somewhat invasive in the northeast.			
<i>Amelanchier arborea</i>	Shadbush, Serviceberry	zone 4-9	variable
<i>A. canadensis, A. laevis</i>			
Moist, acid soils, good for wet and-or naturalized areas, sun-shade. Newer cultivars are reported to be less subject to pest and disease pressure. Generally multi-stemmed with white flowers in early spring followed by purple-black berries in summer. Good fall foliage.			
<i>Aralia spinosa</i>	Hercules Club	zone 4-9	10/20' x wide
Tolerant of adverse soil conditions, full sun/light shade, pH tolerant. Spiny stems and pinnately compound leaves that reach 64" in length. Careful siting required due to a proliferation of shoots from the base; can become an impenetrable thicket. Potentially invasive.			
<i>Arctostaphylos uva-ursi</i>	Bearberry	zone 2-5	6-12" x 2-4'
Does best in poor, dry, sandy soils, difficult to transplant, full sun, acidic conditions. Should be grown as container plants. Native.			

- Aronia arbutifolia*** **Red Chokeberry** zone 4-9 6-10' x 3-5'
- A. melanocarpa*** **Black Chokeberry**
-
- Adaptable to various soils, tolerates both wet and dry soils, sun-light shade but best fruit production in full sun. Good for massing or naturalizing. White flower clusters in spring, red berries that persist into winter. *Aronia melanocarpa* is a smaller shrub with black fruit.
- Aucuba japonica*** **Japanese Aucuba** zone 7+ 6' x 6'
-
- Moist soils high in organic matter, must be planted in shade, will scorch in full sun; red berries on female plants, leathery green leaves will be evergreen in a mild winter. Variegated cultivars available.
- Azalea** **see *Rhododendron*.**
-
- Berberis gladwyensis*** **William Penn Barberry** zone 7+ 4' x 4'
-
- Moist, acidic soils, full sun to light shade, transplants easily. Yellow flowers in April; dark evergreen leaves turn bronze in winter.
- Berberis julianae*** **Wintergreen Barberry** zone 5-8 6/8' x 10/12'
-
- Tolerant of most soil conditions except wet. Full sun/light shade. Dark green spiny evergreen leaves, may show winter damage in exposed, windy locations; considered the hardiest of the evergreen barberries. Best left unpruned; makes an effective thorny hedge.
- Berberis x mentorensis*** **Mentor Barberry** zone 6-8 5' x 5'
-
- Culture similar to the above; stiff, upright growth habit, dark green leathery foliage, semi-evergreen. As above, best left unpruned; an excellent hedge material.
- Berberis verruculosa*** **Warty Barberry** zone 6-8 3/6' x 3'
-
- Culture similar to the above; leaves dark green above, whitish undersurface turning a dark purple in winter. Good compact growth, useful as hedging material, may show winter damage in exposed, windy locations.
- Betula nigra*** **River Birch** zone 4-9 40-70' x 40'
-
- Less susceptible to leaf miner, resistant to bronze birch borer, prefers moist well drained soils but tolerates dry conditions once established. 'Heritage' is a superior cultivar with exfoliating bark that is a lighter salmon color than the species. It is a rapid grower once established in the landscape.
- Callicarpa dichotoma*** **Purple Beautyberry** zone 5-8 3-4' x 3'
-
- Moist, well drained soils, full sun for best fruiting; should be pruned hard in late winter for best fruiting effects, may be considered a maintenance problem for this reason. Produces abundant purple berries on arching branches in the fall.
- Calycanthus floridus*** **Carolina Allspice** zone 5-9 6-9' x 6-12'
-
- Adaptable to many soil conditions, pH adaptable, sun-shade. Produces fragrant reddish-brown flowers in late spring; a useful shrub for the border.

<i>Carpinus betulus</i>	European Hornbeam	zone 4-7	40-60' x 40'
Tolerates wide range of soil conditions, prefers moist, well drained soils but moderately drought tolerant once established, full sun-light shade, tolerates shearing. A good landscape tree with smooth gray bark, is often used as hedging or screen; many excellent cultivars available, including fastigiate.			
<i>Carpinus caroliniana</i>	American Hornbeam	zone 3-9	20-30' x equal spread
Moist, acid soils, tolerates drier sites, partial-deep shade. Smooth gray, beech-like bark, useful as an understory tree.			
<i>Cephalotaxus harringtonia</i>	Japanese Plum Yew	zone 5-9	5-10' x spreading
Moist, well drained soil, tolerates drought once established, excellent for shade-part sun.			
<i>Cercidiphyllum japonicum</i>	Katsura Tree	zone 4-8	40-60' x 20-30'
Moist, well drained soil preferred, will need supplemental water during establishment if dry conditions occur. Tends to develop multi-stemmed character if not trained to a single trunk. Attractive opposite, heart-shaped leaves with beautiful golden to apricot fall color.			
<i>Chamaecyparis nootkatensis</i>	Alaska-cedar	zone 5-7	30-45' x narrow
Moist, well drained soil, humid atmosphere, sun. 'Pendula' is a graceful weeping form with dark green foliage.			
<i>Chamaecyparis obtusa</i>	Hinoki Falsecypress	zone 5-8	varies
Moist, well drained soil, full sun, some protection from wind. Many cultivars available.			
<i>Chamaecyparis pisifera</i>	Sawara Falsecypress	zone 4-8	varies
Moist, well drained, acid soils, full sun, tolerates wind. One of the toughest evergreens for seaside and street side locations; tends to self shade its inner branches causing the inner needles to turn brown.			
<i>Chamaecyparis thyoides</i>	Atlantic Whitecedar	zone 3-8	40-50' x 10-20'
Moist soils, full sun; found in wet and boggy areas as a native plant.			
<i>Chionanthus retusus</i>	Chinese Fringetree	zone 6-8	25-30' x equal spread
Moist, well drained soil, full sun-part shade, tolerates air pollution. Tree form with gray bark, white feathery flowers in May.			
<i>Chionanthus virginicus</i>	White Fringetree	zone 4-9	12' x 20'
Very adaptable to soil types, prefers moist, well drained, full sun. Grows very wide so careful siting of the plant is important. Fragrant creamy-white flowers in June followed by blue-black fruit in September; dioecious plants. Fruit is attractive to birds.			
<i>Cladrastis kentukea (lutea)</i>	Yellowwood	zone 4-8	30-50' x 40'
Well drained soils, alkaline conditions, tolerates acidic soils, full sun. Can be weak wooded due to narrow branching angles of major limbs. Can be sensitive to drought-heat, does not like compacted soils.			

- Clethra alnifolia*** **Sweet Pepperbush** **zone 3-9** **3-8' x 4-6'**
 Dry to moist, acidic soil supplemented with organic matter, light shade-sun, salt tolerant. Generally pest free; mites may be a problem in a hot, dry location. Fragrant flowers in late summer; pink flowered cultivars are also available. Blooms best in full sun.
- Clethra barbinervis*** **Japanese Clethra** **zone 6-8** **10-15' x 8-10'**
 Prefers a soil supplemented with organic matter, considered drought intolerant, full sun-part shade. Attractive bark, fragrant, white flowers in drooping panicles in late summer.
- Comptonia peregrina*** **Sweet Fern** **zone 2-7** **2' x 4-6'**
 Well adapted to poor, dry infertile soils, full sun-light shade. Difficult to transplant, best when container grown. Somewhat invasive although slow growing. Good for naturalizing or on embankments.
- Cornus kousa*** **Kousa Dogwood** **zone 5-8** **20-30' x equal spread**
 Performs well in moist, well drained soils, does well in sandy soils supplied with organic matter, prefers sun, more drought tolerant and cold hardy than flowering dogwood, resistant to dogwood anthracnose (resistant to gypsy moth). Blooms after the foliage has emerged in June, creamy white bracts persist for several weeks; large red-orange fruit effective in the fall. Exfoliating bark on mature specimens.
- Cornus mas*** **Cornelian-Cherry** **zone 4-8** **20-25' x 25-30'**
C. officinalis **Japanese Cornel**
 Adaptable as to soil types, good drought tolerance once established, sun-light shade. One of the earliest spring flowering shrubs with yellow flowers in April, attractive bright red fruit in late summer. *C. officinalis* has reddish-brown exfoliating bark. May be sheared into hedges. Fruit of *C. mas* can be messy and attract bees.
- Cornus racemosa*** **Gray Dogwood** **zone 4-8** **10-15' x very wide**
 Adaptable to wet or dry soils, full sun -light shade. Spreads rapidly by root suckers; siting important to avoid maintenance problems. Best for naturalized areas. Most drought tolerant of the native shrub dogwoods.
- Cornus* x 'Stellar' series** **Hybrid Dogwoods** **zone 5-8** **20-25' x equal spread**
 Interspecific hybrids developed at Rutgers University, show typical hybrid vigor, appear to be resistant to dogwood borer and dogwood anthracnose. Blooms between *C. florida* and *C. kousa*. Of the six cultivars, one is pink and the rest are creamy white.
- Corylus colurna*** **Turkish Hazel** **zone 4-7** **40-50' x 12-15'**
 Adaptable to adverse conditions, adaptable to pH, very drought tolerant once established. Broadly pyramidal in habit, useful as a street tree as well as landscape specimens.
- Cotinus coggygria*** **Common Smoketree** **zone 4-8** **10-15' x 10-15'**
 Prefers well drained soil but will tolerate a wide range of conditions, sun-light shade. Small five-petaled flowers are surrounded by 6"-8" pinkish hairs which impart a "smokey" appearance from late June-August. Several forms are available with differing foliage colors.
- Cotinus obovatus*** **American Smoketree** **zone 4-8** **20-30' x 15'**
 Adaptable to a wide range of soils, tolerates drought and alkaline soils, sun. Best growth is made in full sun. A small tree with outstanding fall foliage.

- Cotoneaster adpressus*** **Creeping Cotoneaster** zone 5-8 1/1.5' x 4/6'
- Moist, well drained soils, full sun, drought tolerant once established, pH tolerant and adaptable to seaside conditions. Compact ground cover with glossy green leaves, white blossoms in May, red fruits effective in fall and winter. Subject to mites under hot dry conditions; also subject to Hawthorn lace bug.
-
- Cotoneaster divaricatus*** **Spreading Cotoneaster** zone 4-7 5/6' x equal spread
- Culture similar to the above; multi-stemmed shrub with arching branches, dark green foliage with yellow to red fall color; white flowers in May with red, egg shaped fruit effective in the fall and winter. Less subject to problems than others in this genus.
-
- Cotoneaster salicifolius*** **Willowleaf Cotoneaster** zone 6-8 10/15' x 10'
- Culture similar to the above; large evergreen shrub with arching branches, dark green foliage turns purple in winter; bright red persistent fruit effective fall through winter. Usually available as low growing cultivars such as 'Emerald Carpet', 'Repens' and 'Scarlet Leader'.
-
- Crataegus viridis* 'Winter King'** **Green Hawthorn** zone 4-7 20-25' x equal spread
- Tolerates poor soil conditions and windy sites. Less susceptible to disease-insect pressure than other hawthorns. Attractive bark and showy red fruit are good winter characteristics.
-
- x *Cupressocyparis leylandii*** **Leyland Cypress** zone 7-10 60-70' x 10-15'
- Adaptable to soil conditions, full sun required, tolerates salt spray. A vigorous grower.
-
- Deutzia gracilis*** **Slender Deutzia** zone 4-8 2-6' x 3-4'
- Tolerates most soil conditions as long as well drained, full sun-light shade. May require pruning of dead wood in spring. White flowers in late May; 'Nikko' is a good, compact cultivar that is useful as a groundcover.
-
- Deutzia scabra*** **Fuzzy Deutzia** zone 5-7 6/10' x 8'
- Average garden soil, full sun, pH tolerant. White flowers in late May, somewhat arching growth habit. Requires annual pruning to remove dead wood. Several cultivars available.
-
- Diervilla sessilifolia*** **Dwarf Bush Honeysuckle** zone 4-8 3/5' x 3/5'
- Vary adaptable to soil conditions, drought and wind tolerant once established, full sun/light shade. Spreads by underground stems, will form a large mass, useful as a ground cover in rough areas.
-
- Enkianthus campanulatus*** **Redvein Enkianthus** zone 4-7 12-15' x 5-6'
- Requires acid soil supplemented with organic matter, culture similar to *Rhododendron*, sun-light shade. Bright green, whorled leaves with variable fall color; bell-shaped creamy flowers in late May-early June. Bright scarlet fall foliage.
-
- Eucommia ulmoides*** **Hardy Rubber Tree** zone 4-7 40-60' x equal spread
- Adaptable, drought tolerant, full sun, pH adaptable.
-
- Evodia daniellii*** **Korean Evodia** zone 6-8 25-30' x equal spread
- Moist, well drained soils but is adaptable, tolerates drought once established, full sun. Small white flowers in flat topped clusters in mid summer; attractive to bees.

Exochorda racemosa **Pearlbush** **zone 4-8** **9-15' x equal spread**

Well drained, acid soils, full sun to light shade, drought and heat tolerant once established. Flower buds arranged like pearls along the stem, opening into five petaled, white flowers in April. Eriophyid mite damage to foliage requires occasional treatment.

Fagus sylvatica **European Beech** **zone 4-7** **50-60' x 100-120'**

Tolerates soil conditions, likes acid, well drained conditions, full sun. Shallow rooted, big for the average residential landscape but excellent for parks, golf courses, other open spaces; needs room to develop into a mature specimen. Many fine cultivars available in green and purple leaf form, weeping, cutleaf, etc.

Forsythia x intermedia **Border Forsythia** **zone 6-8** **8/10' x 10/12'**
F. suspensa **Weeping Forsythia**

Reasonably adapted to all soil conditions except poor drainage, full sun. Flower buds may suffer winter kill. Best grown unpruned in adequate space; may become too large for the average landscape hence annual pruning is required to maintain good shape.

Fothergilla major **Large Fothergilla** **zone 4-8** **6-10- x equal spread**

Acid, sandy loam supplemented with organic matter, full sun-partial shade. Not particularly drought tolerant. White, bottle-brush shaped flowers appear in late April-early May, fragrant. Good dark green foliage with orange-red fall coloration.

Ginkgo biloba **Ginkgo / Maidenhair Tree** **zone 3-8** **50-80' x 30-40'**

Adaptable to soil conditions and pH, full sun, tolerates air pollution, good salt tolerance, good heat tolerance. Must use male cultivars as decomposing fruit on female trees in the fall are malodorous (however, the nuts are considered a delicacy). Slow to establish.

Gymnocladus dioicus **Kentucky Coffee Tree** **zone 3-8** **60-75' x 40-50'**

Adaptable to various soil conditions but prefers deep, rich loam, full sun, tolerates drought and urban conditions; a large tree for park-like surroundings. Wood may be somewhat brittle. Slow to establish.

Halesia carolina **Carolina Silverbell** **zone 4-8** **30-40' x 20-30'**

Moist, acid soils, sun-light shade. White, bell-shaped flowers in early spring before foliage emerges.

Hammamelis x intermedia **'Arnold Promise'** **zone 6-8** **20' x 15'**
H. mollis **Chinese Witchhazel**
H. vernalis **Vernal Witchhazel**
H. virginiana **Common Witchhazel**

Generally prefers moist, acid soils high in organic matter, sun-part shade. *H. vernalis* is native to neutral to slightly alkaline soils; requires good soil aeration. Flowers appear in late winter; four petaled, fragrant. *H. virginiana* blooms in the fall.

Hovenia dulcis **Japanese Raisintree** **zone 6-7** **30' x 20'**

Adaptable to soils, will not tolerate wet conditions, full sun.

<i>Hydrangea arborescens</i>	Smooth Hydrangea	zone 3-9	3-5' x greater spread
Adaptable, prefers well drained, moist soil, partial shade. Will tolerate full sun if ample moisture is available. <i>H. arborescens</i> , f. <i>grandiflora</i> and 'Annabelle' are improved selections.			
<i>Hydrangea macrophylla</i>	Bigleaf Hydrangea	zone 6-9	3-6' x equal spread
Prefers a moist soil supplemented with organic matter, tolerates coastal conditions, sun-light shade. Pruning is an art with this species, flower buds are less hardy than the rest of the plant, frequently winter killed. Soil pH governs color. 'Nikko Blue' is a good, older selection with dark blue color. While most cultivars bloom on the previous year's growth, 'All Summer Beauty' is reputed to flower on current season growth.			
<i>Hydrangea paniculata</i>	Panicle Hydrangea	zone 3-8	6-10 x 6-10'
Prefers loamy soil but is adaptable, sun-part shade, urban tolerant. 'Grandiflora' and 'Tardiva' are improved selections. Extremely long flowering period as the dry flowers persist well into the fall.			
<i>Hydrangea quercifolia</i>	Oak leaved Hydrangea	zone 5-9	4-6' x equal spread
Moist, fertile, well drained soils, sun-part shade, likes cool, moist root environment. Siting important to provide these conditions. 'Snow Queen' is an improved selection. Excellent fall foliage.			
<i>Ilex aquifolium</i>	English Holly	zone 7+	30' x 20-25'
Moist acidic soils well supplemented with organic matter; sun-shade; dark blue-green spiny leaves, bright red berries on female plants. Numerous cultivars available.			
<i>Ilex cornuta</i>	Chinese Holly	zone 7+	8-10' x 10'
Moist acidic soils well supplemented with organic matter; sun-shade; dark green leaves with three spines at apex, older leaves have fewer spines. More adaptable to site conditions than other hollies, tolerant of heat and drought. Many cultivars available.			
<i>Ilex crenata</i>	Japanese Holly	zone 6-7	varies
Moist, well drained acid soils, full sun-part shade, fairly adaptable.			
<i>Ilex glabra</i>	Inkberry	zone 5-9	6-8' x 8-10'
Moist soils to wet soils, shade tolerant but not especially drought tolerant. 'Compacta' is a better-shaped plant than the species.			
<i>Ilex latifolia</i>	Lusterleaf Holly	zone 7+	20-25' x ?
Moist acidic soil well supplemented with organic matter; sun-shade; dark evergreen leaves with dull red berries in clusters on female plants.			
<i>Ilex x meserveae</i> hybrids	Blue Holly	zone 5-8	varied
Moist, well drained soil supplemented with organic matter, acid conditions, sun-part shade. Dark blue-green leaves, bright red berries. Well adapted to New England.			
<i>Ilex pedunculosa</i>	Long-stalk Holly	zone 5	15-25' x 15'
Moist, acid soil supplemented with organic matter, sun-part shade, resistant to the holly leaf miner. Leaves resemble Mountain Laurel, bright red berries on long stalks.			

- Ilex verticillata*** **Winterberry** **zone 3-9** **6-10' x equal spread**
 Moist, acidic soils supplemented with organic matter, does well under wet conditions, also in lighter soils but is considered drought intolerant, sun-light shade. Plants are dioecious, both sexes required for pollination and berry production. Many cultivars available; fruit colors up after the first frost and is often retained through the winter. Tolerates heavy pruning; fruits on new wood. The hybrid 'Sparkleberry', a National Arboretum introduction, is noted for its persistent berries.
- Itea virginica*** **Virginia Sweetpire** **zone 5** **3-4' x 6'**
 Moist, fertile soils, tolerates wet conditions, full sun-part shade. Cultivar 'Henry's Garnet' sports white flowers in upright spikes in June-July; foliage has reddish-purple color in fall.
- Juniperus chinensis*** **Chinese Juniper** **zone 3-9** **dependent on cultivar**
 Moist, well drained soils, pH adaptable, sun. May be used as a groundcover, shrub, screen, etc., depending on the cultivar. Many cultivars are susceptible to Phomopsis or Kabatina blights which can cause serious twig dieback. The following cultivars are reported to be resistant to one or both of the above fungi: 'Foemina' (P), 'Iowa' (P), 'Keteleeri' (P), 'Pfitzeriana-aurea' (P+K), 'Robusta Green' (P), var. *sargentii* 'Glaucua'(P+K), 'Gold Coast' (K).
- Juniperus conferta*** **Shore Juniper** **zone 6-9** **1.5' x spreading**
 Adaptable to poor, dry soils, full sun, salt tolerant, good for coastal locations. Low-growing groundcover, intolerant of wet soils.
- Juniperus virginiana*** **Eastern Red Cedar** **zone 2-9** **15-30' x 8-20'**
 Adaptable to poor, draughty soils, pH adaptable, full sun, salt tolerant. Alternate host for Cedar-apple rust. Tough native plant for screening, naturalizing, coastal planting.
- Kalmia latifolia*** **Mountain Laurel** **zone 5-9** **7-15' x similar spread**
 Requires acid, moist soil supplemented with organic matter, good drainage, full sun-light shade. A good native plant if sited correctly. Many new cultivars available; red and pink flowered forms need full sun to develop good flower color.
- Kalmia angustifolia*** **Sheep Laurel** **zone 2-6** **1-3' x 2'**
 Foliage may be poisonous. Tolerates poor, sterile soils. Prefers moist sites. Cultivar 'Hammondasset'.
- Kalopanax pictus*** **Castor-Aralia** **zone 4-7** **40-60' x equal spread**
 Moist soils, full sun. Tolerant of alkaline soil and long lived. Coarse textured plant provides tropical effect in the landscape.
- Koelreuteria paniculata*** **Golden Rain Tree** **zone 5-9** **30-40' x equal spread**
 Adaptable to a wide range of soils, tolerates drought, heat, wind, pH and air pollution. Yellow blossoms in mid-summer in loose, 12"-15" panicles.
- Kolkwitzia amabilis*** **Beautybush** **zone 4-8** **6-10' x 8'**
 Adaptable to a variety of soil conditions; prefers moist, well drained, full sun. Usually requires annual pruning out of older canes to retain form and prevent legginess.

<i>Ligustrum amurense</i>	Amur Privet	zone 3-7	12-15' x 9-12'
Adaptable to soil conditions, full sun-part shade, drought and salt tolerant. Several insect and disease problems occur on Privet, but they seem to be able to withstand them without a great deal of harm. Seeds readily and may be invasive.			
<i>Maackia amurensis</i>	Amur Maackia	zone 3-7	20-30' x equal spread
Appears to be very adaptable, full sun, pH tolerant. Summer flowering. Reputed to be extremely drought tolerant.			
<i>Magnolia acuminata</i>	Cucumbertree Magnolia	zone 3-8	50-80' x equal spread
Prefers moist, well-drained acid soils, but performs well in calcareous soils also. Not tolerant of extreme drought or wetness, or air pollution.			
<i>Magnolia kobus</i>	Kobus Magnolia	zone 4-8	30-40 x equal spread
Performs well on a variety of soil, including high pH.			
<i>Magnolia x loebneri</i>	Loebner Magnolia	zone 5-9	15-20' x variable
Adaptable to soils except extremes of moist or dry, pH adaptable, sun-part shade. Vigorous growers, extremely tolerates urban conditions. Many improved cultivar selections i.e., 'Ballerina', 'Leonard Messel', 'Merrill'. April blooming.			
<i>Magnolia x soulangiana</i>	Saucer Magnolia	zone 4-9	20-30' x var. spread
Prefers moist, deep, acidic soils and full sun. Plant to avoid late spring frosts that nip emerging flowers.			
<i>Magnolia stellata</i>	Star Magnolia	zone 4-8	15-20' x 10-15'
Moist, well drained soil supplemented with organic matter. Full sun to light shade.			
<i>Magnolia virginiana</i>	Sweetbay Magnolia	zone 5-9	10-20' x equal spread
Does well in wet soils, considered drought intolerant, prefers acid soil, tolerates light shade. Semi-evergreen in protected areas.			
<i>Malus species</i>	Crabapple	zone 4-7	variable
Quite adaptable as to soil type, as long as it is well drained, prefer acid conditions, full sun, salt tolerant. The best crabapples flowers annually and are disease resistant. See Appendix 1 for a listing. Crabapples are particularly attractive to Japanese beetle adults, and may need protection when beetle populations are high.			
<i>Microbiota decussata</i>	Russian Arborvitae	zone 3-8	12" x very wide
Moist soils, tolerant of shade, very cold hardy. Low evergreen shrub, bright green summer foliage turning purple-brown in winter. Graceful branchlets arranged in flat sprays.			
<i>Myrica pensylvanica</i>	Bayberry	zone 3-6	5-12' x variable
Does extremely well in poor sandy soils, may be adaptable to heavy soils, full sun-light shade.			

<i>Nyssa sylvatica</i>	Tupelo	zone 3-9	30-50' x 20-30'
Moist, well drained soils, tolerates wet soils, will also grow on upland areas. Full sun-light shade. Difficult to transplant, should be grown as a container plant. Excellent fall foliage.			
<i>Ostrya virginiana</i>	Ironwood / Hop Hornbeam	zone 3-9	25-40' x 20-30'
Moist, well drained soils, slightly acid, tolerates dry conditions once established, full sun-part shade. One of the most drought tolerant and salt resistant small trees.			
<i>Oxydendrum arboreum</i>	Sourwood / Sorrel Tree	zone 6-9	25-30' x 20'
Moist, well drained soils, slightly acid, tolerates dry conditions, full sun-part shade. Drooping flower clusters in mid-summer; excellent burgundy fall foliage.			
<i>Parrotia persica</i>	Persian Parrotia	zone 5-8	20-40' x 15-30'
Extremely tolerant once established, sun-part shade. Exfoliating bark on older branches, yellow-orange fall foliage.			
<i>Phellodendron amurense</i>	Amur Corktree	zone 3-7	30-45' x equal spread
Adaptable to a wide range of soils, tolerates pH, drought, air pollution and full sun. Gets large, siting important; fruit can be messy.			
<i>Picea omorika</i> <i>P. orientalis</i>	Serbian Spruce Oriental Spruce	zone 4-7	50/60' x 25'
Moist, well drained soils, light shade, pH tolerant, would benefit from shelter against winter winds. Considered urban tolerant. Tall, narrow profile may lend it to being planted as an evergreen street tree. <i>Picea orientalis</i> prefers clay-loam soils but is tolerant of poor soil conditions, pH adaptable, benefits from shelter against winter winds.			
<i>Pieris floribunda</i>	Mountain Pieris	zone 4-8	2-6' x equal spread
Moist, well drained soil, more tolerant of high pH than <i>P. japonica</i> and also apparently resistant to the lacebug. The flower structure is upright panicles; an interspecific hybrid, 'Brouwer's Beauty', has flower clusters that are more horizontal and arching as well as having a more compact growth habit, and it is less susceptible to lacebug although it can become infested if planted in full sun (Lacebug problems on <i>P. japonica</i> are also greatly reduced in the shade). The species is susceptible to Phytophthora root rot if not sited in a well drained location.			
<i>Pinus cembra</i>	Swiss Stone Pine	zone 5-7	30-40' x 15-20'
Well drained, acidic soil, good air circulation, full sun. Very slow growing. Subject to white pine weevil damage to terminal.			
<i>Pinus koraiensis</i>	Korean Pine	zone 5-7	30-40' x 20-30'
Adaptable as to soil types, full sun-light shade, very hardy.			
<i>Pinus parviflora</i>	Japanese White Pine	zone 5-7	25-50' x similar spread
Requires good drainage but tolerates most soil conditions including soil compaction, salt tolerant, drought tolerant once established.			

<i>Pinus strobus</i>	Eastern White Pine	zone 3-8	50-80' x 20-40'
Moist, well drained soils but tolerates dry conditions, full sun-light shade, rapid growing when young. Subject to White pine weevil damage to terminal, intolerant of salt. An excellent native evergreen.			
<i>Potentilla fruticosa</i>	Bush Cinquefoil	zone 2-7	1-4' x 2-4'
Moist, well drained soils but is very adaptable, will do well under dry conditions, full sun-light shade, likes neutral to alkaline conditions. Extremely cold hardy. Long bloom period. Many improved cultivars available.			
<i>Prunus maritima</i>	Beach Plum	zone 3-6	6' x equal spread
Adaptable to most soil conditions except wet, drought tolerant once established, full sun, salt tolerant. White flowers in May followed by purple fruit in late summer. Relatively pest free but subject to tent caterpillar, brown tail knot, plum pockets, and eriophyid mites. Good for naturalizing in coastal plantings.			
<i>Prunus sargentii</i>	Sargent Cherry	zone 5-9	40/50' x 20/30'
Moist, well drained soils, full sun/light shade. Single pink blossoms borne in spring before the foliage, fall colors of yellow to red. Considered short lived, relatively free of problems in a trouble prone genus.			
<i>Prunus subhirtella</i> 'Autumnalis'	Higan Cherry	zone 4-8	20/40' x 15/30'
Culture similar to the above; semi-double pink flowers in spring, occasionally reblooming in fall. Considered short lived, relatively pest free.			
<i>Pseudolarix kaempferi</i>	Golden-larch	zone 4-7	30-50' x 20-40'
Light, well drained soil in full sun, tolerates air pollution, intolerant of alkaline conditions.			
<i>Pseudotsuga menziesii</i>	Douglas-fir	zone 4-6	40-80' x 12-20'
Moist well drained soils, neutral to slightly acid conditions, not particularly drought tolerant. Do not plant near spruce (alternate host for Cooley spruce gall adelgid).			
<i>Prunus maackii</i>	Amur Chokecherry	zone 2-6	35' x 20'
Well drained soil preferred, pH tolerant, sun-shade. Considered weak wooded and short lived.			
<i>Ptelea trifoliata</i>	Hoptree	zone 3-9	15-20' x equal spread
Moist, well drained soils but very adaptable, sun-light shade. An interesting native tree with trifoliate leaves and fragrant flowers in June..			
<i>Pterostyrax hispida</i>	Epaulette Tree	zone 4-8	20-30' x equal spread
Prefers moist, acid, well drained soils, sun-light shade.			
<i>Pyrus calleryana</i> cultivars	Callery Pear	zone 5-8	30-50' x 20'
Adaptable to varying soils, air pollution, etc. Narrow branch crotches are prone to breaking. Fire blight is a serious problem in warmer areas. 'Aristocrat' has more horizontal branching and is less prone to breakage than 'Bradford'; 'Chanticleer' is more narrowly upright and shows better fire blight resistance. White flowers in clusters in spring, good fall foliage.			

Quercus acutissima **Sawtooth Oak** **zone 6-8** **35/45' x var. spread**

Prefers acid, well drained soils but adaptable to varying conditions, may develop chlorosis on high pH soils, full sun. Simple foliage with serrate edges, develops yellow fall color.

Quercus alba **White Oak** **zone 3-9** **50-80' x equal spread**

Adaptable to soil types, prefers moist, acid conditions, full sun. Dark blue-green lobed leaves, fall color not dependable; burgundy in good years. White oaks are more likely to die from gypsy moth attack than other oak species.

Quercus bicolor **Swamp White Oak** **zone 3-8** **50-60' x equal spread**

Moist, acid soils but very drought tolerant once established, broadly lobed, leathery leaf, good dark green color, yellow fall foliage. Several pests and diseases attack this plant but cause no significant damage.

Quercus palustris **Pin Oak** **zone 4-8** **50-60' x 25-30'**

Moist, acid soils, intolerant of high pH, full sun, tolerates wet soils and urban conditions. Deeply lobed leaves with pyramidal growth habit; lower branches droop.

Quercus phellos **Willow Oak** **zone 5-9** **40-60' x equal spread**

Adaptable to soil conditions, full sun, fibrous root system allows for ease of transplanting; narrow, simple leaves.

Quercus rubra **Red Oak** **zone 4-8** **60-75' x 75'**

Moist, acid soils, full sun. Intolerant of high pH, tolerates urban conditions. Easily transplanted.

***Rhododendron* species and cultivars** **zone 2-9** **ground cover/sm. tree**

Over 900 species and thousands of hybrids exist, most are low maintenance plants when grown in good sites. They generally prefer moist well-drained acid soils high in organic matter and perform best in partial shade. In full sun winter injury and blossom fading is more pronounced as are problems with lace bugs. In southern New England 'Dora Amateis' and *R. maximum* are particularly susceptible to lacebug when grown in full sun and to our south lacebug problems are much more widespread. With the exception of some of the heavily indumented rhododendrons (*R. yakushimanum*, *R. smirnovii*, and hybrids) all are susceptible to the black vine weevil which can kill small plants. (See discussion under *Taxus*.)

Among the large leaved rhododendrons *R. fortunei* and its hybrids ('Scintillation') are very attractive to deer. Small leaved rhododendrons, including 'PJM', 'Silvery Pink', 'Anglo', etc. are particularly cold tolerant as are deciduous azaleas (*R. schlippenbachii*, *R. calendulaceum*, *R. viscosum*, etc.). The deciduous Exbury hybrids, however, have too many insect and disease problems to be included on this list.

There are thousands of good hardy hybrid evergreen azaleas including 'Hino crimson', 'Delaware Valley White', *R. poukhenensis*, etc. However Belgian or florist azaleas are often mistakenly sold as hardy. As a rule of thumb if the flower looks too good to be true, it is probably not hardy.

Several species are native to southern New England, including *R. maximum*, *R. viscosum*, *R. prinophyllum* *R. canadense* and *R. periclymenoides*.

Rhus aromatica **Fragrant Sumac** **zone 3-9** **2'-4' x 6-8'**

Adaptable to various soil conditions, full sun. Spreading habit of cultivar 'Gro-Low' makes a good choice for embankments or a ground cover.

Symphoricarpos x chenaulti **Chenault Coralberry** zone 4-7 2' x 12'

A cross between *S. microphyllus* and *S. orbiculatus*. 'Hancock' is a beautiful low-growing type.

Syringa meyeri 'Palibin' **Meyer Lilac** zone 4-7 4-8' x equal spread
S. microphylla **Littleleaf Lilac**
S. patula 'Miss Kim' **Manchurian Lilac**

Adaptable to various soil conditions, full sun, resistant to powdery mildew.

Syringa reticulata **Japanese Tree Lilac** zone 4-7 20-30' x 12-15'

Well drained, moist soil, pH tolerant, full sun. Salt and wind tolerant. Resistant to lilac borer and powdery mildew. Early summer flowering. 'Ivory Silk' and 'Summer Snow' are excellent cultivars.

Taxodium distichum **Baldcypress** zone 4-9 50/70' x 20/30'

Moist acid soils, very adaptable to wet soils, full sun. A large tree for parks, estates or wet areas.

***Taxus* species and cultivars** **Yews**

Black vine weevil is a very serious pest of young yews, particularly in the nursery. Larger plants sited in the landscape are reasonably tolerant of this pest, but because yews can harbor large populations of weevils, landscapers should exercise care in planting small susceptible plants (azaleas, euonymus, etc.) near infested yews. The foliage and fruit of yew are toxic to children if ingested.

Taxus baccata 'Repandens' **Spreading English Yew** zone 5-7 2-4' x 12-15'

Hardy dwarf, spreading form has pendulous branch tips and dark green needles.

Taxus cuspidata **Japanese Yew** zone 4-7 10-40' x equal spread

Prefers a moist, sandy loam, does not tolerate wet soils for any length of time.

***Taxus x media* cultivars** zone 4-7 variable

This hybrid of *T. baccata* and *T. cuspidata* resembles *T. cuspidata* in many respects. Common cultivars include: 'Brownii', 'Densifolmis', 'Hatfieldii', 'Hicksii', 'Nigra' and 'Tauntonii'. See *T. cuspidata* for cultural considerations.

Thuja plicata **Giant / Western Arborvitae** zone 5-7 50-70' x 15-25'

Moist, fertile soils but tolerant of dryer soils; sun-shade; pH adaptable. A fast growing narrow pyramidal tree with dark evergreen leaves and reddish-brown fibrous bark.

***Tsuga* species** **Hemlocks**

Hemlock woolly adelgid is now a serious pest of both *Tsuga canadensis* and *T. caroliniana* throughout southern New England. Hence, we urge caution in the use of these important landscape species. Left untreated, this pest will rapidly kill susceptible hemlocks, but yearly applications of insecticides provide effective control in the landscape. Species resistant to the adelgid include *T. diversifolia*, *T. heterophylla*, *T. chinensis* and *T. mertensia*. *T. sieboldii* has apparent tolerance. While all of these species are being evaluated for regional adaptability, only *T. diversifolia* and *T. heterophylla* can be recommended with reasonable confidence at this time.

<i>Tsuga diversifolia</i>	Northern Japanese Hemlock	zone 5-7	35-60' x 20-30'
Slow growing, often multi-stemmed tree with dense, dark green foliage. Prefers moist sites in full sun, easily transplanted. At least one R.I. nursery has been growing this plant for years, and it appears to be well suited to our climate.			
<i>Tsuga heterophylla</i>	Western Hemlock	zone 6-8	100' x 30'
Looks very much like Canadian hemlock but not quite as "soft" in appearance. Prefers a humid climate and moist soil. Cold hardiness is <u>marginal</u> in New England; plants from northern Idaho show very slight winter damage, coastal material is probably not hardy here.			
<i>Ulmus parvifolia</i>	Lacebark Elm	zone 4-9	40-50' x 40'
Adaptable to soil and pH conditions, good for urban areas, resistant to Dutch elm disease, elm leaf beetle and Japanese beetle. Several new cultivars recently introduced; excellent bark and foliage.			
<i>Vaccinium corymbosum</i>	Highbush Blueberry	zone 3-8	6-12' x 8-12'
Native to swamps but does well in dry, acid, poor and sandy soils in full sun or partial shade. Mulch.			
<i>Viburnum x carlecephalum</i>	Fragrant Viburnum	zone 7+	10' x 10'
Adaptable to soil conditions, prefers moist acidic soils; sun-light shade; easily transplanted. Loose, somewhat open habit, coarse textured leaves; pink buds opening to fragrant white flowers in clusters in May. One of the latest viburnums to bloom.			
<i>Viburnum dentatum</i>	Arrowwood	zone 2-8	6-8' x 15'
Adaptable to various soil conditions, sun-part shade. Forms large clumps.			
<i>Viburnum farreri</i>	Fragrant Viburnum	zone 5-8	8-12' x 6-8'
Early to flower, flower buds may be damaged by late frost.			
<i>Viburnum x Juddii</i>	Judd Viburnum	zone 4-7	4-5' x 4-8'
Moist, well drained soil, full sun. Highly fragrant, semi-snowball type of inflorescence.			
<i>Viburnum lantana</i> 'Mohican'	Wayfaring Tree	zone 4-8	10-15' x equal spread
Adaptable, drought tolerant, tolerates high pH.			
<i>Viburnum plicatum</i> <i>f. tomentosum</i>	Doublefile Viburnum	zone 6-8	8-10' x 9-12'
Moist, well drained soils, not particularly drought tolerant. Preferred cultivars include 'Mariesii' and 'Shasta'.			
<i>Viburnum prunifolium</i>	Blackhaw Viburnum	zone 4-9	12-15' x 8-12'
Adaptable to various soil conditions, drought tolerant once established, sun-part shade. A good shrub or small tree.			

***Viburnum x rhytidophylloides* Lantanaphyllum Viburnum zone 4-8 8/10' x equal spread**

Adaptable to soil conditions, full sun/light shade, needs protection from winter wind. White flat topped flower clusters in April followed by black fruit effective in the fall. Dark green leathery leaves persist in the fall. 'Allegheny' and 'Willowwood' are fine selections.

***Viburnum rhytidophyllum* Leatherleaf Viburnum zone 5-8 10-15' x equal spread**

Well drained soils, somewhat adaptable, shade tolerant, protection from winter wind desirable.

***Viburnum sargentii* Sargent Viburnum zone 4-7 12-15' x equal spread**

Adaptable to soil conditions, pH tolerant, full sun-light shade; a number of USDA introductions look promising, i.e. 'Onondaga' and 'Susquehanna'.

***Viburnum sieboldii* Siebold Viburnum zone 5-7 15-20' x 10-15'**

Adaptable to soil conditions but prefers moist, well drained, pH adaptable, sun-part shade, not particularly drought tolerant. 'Seneca' has very persistent fruit.

***Viburnum trilobum* American Cranberrybush zone 3-8 8-12' x equal width**

Adaptable to soil conditions, easy to grow, full sun-part shade. A native plant.

***Viburnum wrightii* Wright Viburnum zone 6-7 6-10' x equal spread**

Similar to other viburnums in preferences. White flat topped flower clusters in May, showy red fruit in fall.

***Weigela florida* Weigela zone 5-8 6-9' x 9-12'**

Adaptable but prefers a moist well drained soil, full sun, tolerates pollution. Requires rejuvenation pruning to maintain decent shape; many improved cultivars available. Early summer blooming.

***Xanthorhiza simplicissima* Yellowroot zone 3-9 2-3' x spreading**

Moist, well drained soils, tolerates heavy soils, sun-shade, tolerates dry conditions.

***Zelkova serrata* Japanese Zelkova zone 5-8 50-80' x equal spread**

Moist, well drained soils, tolerates drought and wind once established, pH adaptable; 'Village Green' recommended by Prof. Michael Dirr as a superior selection, more cold hardy, resistant to Dutch elm disease and elm leaf beetle, as well as having better fall color. Susceptible to wind damage, branch drop.

APPENDIX 1: URI Crabapple Tree Disease Evaluations: 1992-93

CULTIVAR	FLWRS/FRT	SHAPE	HXW	NOTES	RESISTANCE TO DISEASE			
					APPLE	FIRE	CEDAR	
					SCAB	BLIGHT	APPLE RUST	POWDERY MILDEW
Brandywine	Pink/Yellow	Upright/Spreading	20x20	2	Fair	Excellent	Fair	Excellent
Centurion	Red/Red	Upright/Spreading	20x15	3	Good	Excellent	Excellent	Excellent
Christmas Holly	Wt/Red	Spreading	10x12	4	Good	Good	Excellent	Excellent
David	Wt/Red	Round	15x15	1	Good	Good	Excellent	Excellent
Dolgo	Wt/Red	Upright/Spreading	30x40	1,2,6	Good	Good	Excellent	Excellent
Donald Wyman	Wt/Red	Round	15x15	1,4	Good	Poor*	Excellent	Good
<i>floribunda</i>	Pink-Wt/Red	Horizontal	20x25	2,5	Good	Fair*	Excellent	Good
Harvest Gold	Wt/Gold	Upright	30x15	3,4	Good	Excellent	Excellent	Excellent
Henningi	Wt/Or	Upright	25		Good	Excellent	Good	Excellent
Henry Kohankie	Pink-Wt/Red	Round	20x20	4	Good	Excellent	Good	Excellent
Indian Magic	Pink/Red-Or	Round	15x15	1,3,4	Fair	Excellent	Good	Excellent
Indian Summer	Red/Red	Upright/Spreading	20x20		Good	Good	Excellent	Excellent
Jewelberry	Wt/Red	Shrub	12x15	4,5	Good	Good	Excellent	Excellent
Liset	Red/Maroon	Horizontal	15x20		Good	Good	Excellent	Good
Mary Potter	Wt/Red	Shrub	15x30	1,3,4,5	Good	Good	Excellent	Good
Molten Lava	Wt/Red	Horizontal	15x15	3,4,5	Good	Good	Excellent	Excellent
Ormiston Roy	Wt/Yel-Red	Upright/Spreading	20x25	4	Good	Good	Good	Excellent
Pink Spires	Pink/Maroon	Upright	25		Good	Good	Excellent	Excellent
Prairiefire	Red/Red	Upright/Spreading	20x20		Good	Excellent	Excellent	Excellent
Professor Sprenger	Wt/Or	Round	25x25	3	Excellent	Excellent	Excellent	Excellent
Profusion	Red/DkRed	Round	15x15		Fair	Good	Excellent	Good
Ralph Shay	Wt/Red	Upright Spreading	-	3	Good	Excellent	Excellent	Good
Red Barron	Red/Dk Red	Narrow	18x10	3	Fair	Good	Good	Excellent
Red Jade	Wt/Red	Weeping	15x15		Fair	Fair*	Excellent	Fair*
Red Jewel	Wt/Red	Horizontal	15x12	4	Fair	Poor*	Excellent	Good
Red Splendor	Pink/Red	Upright Spreading	25x25		Fair	Fair*	Good	Fair
Robinson	Red/Red	Upright Spreading	25x25	3	Good	Excellent	Excellent	Excellent
<i>sargentii</i>	Wt/Red	Shrub	8x15	1,2,4	Excellent	Good	Excellent	Excellent
Selkirk	Red/Red	Vase	25x25		Fair	Good	Excellent	Fair*
Sentinel	Wt/Red	Upright Spreading	15x10	4	Good	Good	Excellent	Excellent
Silver Moon	Wt/Red	Upright Spreading	25x25	4	Good	Poor	Excellent	Good
Snowdrift	Wt/Or	Round	20x20	4,5	Good	Fair*	Excellent	Excellent
Strawberry Parfait	Pink/Red	Vase	20x25	1	Good	Excellent	Excellent	Excellent
Sugar Tyme	Wt/Red	Round	20x20	1,2,3,4	Good	Fair*	Excellent	Excellent
<i>tschonoskii</i>	Wt/Yellow	Pyramid	28x14	3	Good	Poor*	Excellent	Excellent
Velvet Pillar	Red/Red	Narrow Upright	20x14		Fair	Fair*	Excellent	Good
White Candied Apple	Pink/Red	Weeping	15x15	3,4	Fair	Excellent	Excellent	Excellent
White Angel	Wt/Gr&Red	Upright Spreading	20x20	4	Good	Fair*	Fair	Excellent
White Cascade	Wt/Coral	Weeping	15x15		Good	Excellent	Excellent	Excellent
Winter Gold	Wt/Yellow	Round	25x25	4	Fair	Fair*	Excellent	Good
<i>yunnanensis</i> 'Veitchii'	Wt/Brown	Narrow	20x10	3	Good	Fair*	Excellent	Good
<i>zumi</i> 'Calocarpa'	Wt/Red	Horizontal	25x30	2,5	Good	Fair*	Excellent	Good

KEY TO NOTES

- 1 - Flowers lightly in alternate years
- 2 - Fragrant flowers
- 3 - Colorful fall foliage
- 4 - Persistent fruit
- 5 - Birds favor fruit
- 6 - Messy fruit drop in midsummer

KEY TO DISEASE RESISTANCE

- EXCELLENT** No problem with disease
- GOOD** Some leaves affected
- FAIR** Most leaves affected; Little or no defoliation
- POOR** Consistently defoliates

* Although we've seen no evidence of the potentially lethal fire blight, or the less serious powdery mildew, conditions in the northeast may favor these diseases.

Please note, this compilation is composed of local data collected over the last three years, tempered with national disease ratings from NCIP plantations across the country. We have dropped from this list the plants most susceptible to apple scab (Hopa, Radiant, and Royalty). This list was compiled by Marsha Browning and Larry Englander, Department of Plant Sciences, URI.

APPENDIX 2: Trees and Shrub Selections for Demanding Situations

DROUGHT OR DRY SOILS

Acanthopanax sieboldianus
Acer campestre
Acer ginnala
Acer tataricum
Aesculus pavia
Aralia spinosa
Arctostaphylos uva-ursi
Berberis x mentorensis
Carpinus betulus
Cladrastis lutea
Comptonia peregrina
Cornus racemosa
Corylus colurna
Cotinus coggygia
Cotinus obovatus
Cotoneaster adpressus
Cotoneaster divaricatus
Cotoneaster salicifolius
Crataegus viridis 'Winter King'
Diervilla sessilifolia
Eucommia ulmoides
Evodia daniellii
Fagus sylvatica
Ginkgo biloba
Gymnocladus dioica
Hammamelis mollis
Hammamelis vernalis
Hammamelis virginiana
Hammamelis x intermedia
 'Arnold Promise'
Hydrangea arborescens
Juniperus chinensis
Juniperus conferta
Juniperus virginiana
Koeleruteria paniculata
Kolkwitzia amabilis
Maackia amurensis
Malus species
Myrica pensylvanica
Oxydendrum arboreum
Phellodendron amurense
Pinus cembra
Pinus koraiensis
Pinus parviflora
Pinus strobus
Potentilla fruticosa
Prunus maritima
Prunus sargentii
Pyrus calleryana cultivars
Quercus acutissima
Quercus alba
Quercus rubra
Rhus aromatica 'Gro-Low'
Rhus chinensis
Rhus copallina
Rosa rugosa
Sophora japonica

Spiraea x bumalda 'Anthony Waterer'
Spiraea x vanhouttei
Symphoricarpos x chenaulti
Syringa reticulata
Ulmus parvifolia
Vaccinium corymbosum
Viburnum prunifolium
Viburnum sieboldii
Xanthorhiza simplicissima
Zelkova serrata

WET SOILS OR FLOODING

Acer rubrum
Aesculus pavia
Alnus glutinosa
Alnus incana
Amelanchier laevis
Aronia arbutifolia
Betula nigra
Calycanthus floridus
Cercidiphyllum japonicum
Chamaecyparis nootkatensis
Chamaecyparis obtusa
Chamaecyparis pisifera
Chamaecyparis thyoides
Chionanthus retusus
Chionanthus virginicus
Clethra alnifolia
Clethra barbinervis
Cornus racemosa
Enkianthus campanulatus
Forsythia intermedia
Forsythia suspensa
Fothergilla major
Hydrangea arborescens
Hydrangea macrophylla
Hydrangea paniculata
Hydrangea quercifolia
Ilex crenata
Ilex glabra
Ilex pedunculosa
Ilex verticillata
Ilex x meserveae hybrids
Itea virginica
Kalmia angustifolia
Kalmia latifolia
Kolkwitzia amabilis
Magnolia virginiana
Nyssa sylvatica
Phellodendron amurense
Quercus bicolor
Quercus palustris
Quercus phellos
Stephanandra incisa 'Crispa'
Taxodium distichum
Vaccinium corymbosum

Viburnum dentatum
Viburnum prunifolium
Xanthorhiza simplicissima

SHADE

Acanthopanax sieboldianus
Acer ginnala
Acer griseum
Acer triflorum
Amelanchier arborea
Amelanchier canadensis
Amelanchier laevis
Aronia arbutifolia
Aronia melanocarpa
Carpinus caroliniana
Cephalotaxus harringtonia
Chamaecyparis obtusa
Chionanthus virginicus
Clethra alnifolia
Cornus kousa
Cornus mas
Cornus officinalis
Cotoneaster salicifolius
Enkianthus campanulatus
Halesia carolina
Hammamelis mollis
Hammamelis vernalis
Hammamelis virginiana
Hammamelis x intermedia
 'Arnold Promise'
Hydrangea arborescens
Hydrangea quercifolia
Ilex crenata
Ilex glabra
Ilex pedunculosa
Ilex verticillata
Ilex x meserveae hybrids
Itea virginica
Ligustrum amurense
Magnolia virginiana
Myrica pensylvanica
Pieris floribunda
Rhododendron species & cultivars
Stephanandra incisa 'Crispa'
Styrax japonica
Taxus baccata 'Repandens'
Taxus cuspidata
Taxus x media cultivars
Tsuga diversifolia
Tsuga heterophylla
Vaccinium corymbosum
Viburnum dentatum
Viburnum prunifolium
Viburnum sieboldii

APPENDIX 2: (continued)

SOIL SALT

Acer campestre
Acer ginnala
Acer griseum
Acer palmatum
Acer pseudoplatanus
Acer tataricum
Aesculus parviflora
Aesculus pavia
Amelanchier arborea
Amelanchier canadensis
Amelanchier laevis
Arctostaphylos uva-ursi
Aronia arbutifolia
Aronia melanocarpa
Betula nigra
Carpinus caroliniana
Cercidiphyllum japonicum
Chamaecyparis nootkatensis
Chamaecyparis obtusa
Chamaecyparis pisifera
Chamaecyparis thyoides
Comptonia peregrina
Cotoneaster adpressus
Cotoneaster divaricatus
Cotoneaster salicifolius
Cupressocyparis leylandii
Diervilla sessilifolia
Hydrangea arborescens
Hydrangea macrophylla
Hydrangea paniculata
Hydrangea quercifolia
Ilex crenata
Ilex glabra
Juniperus chinensis
Juniperus conferta
Juniperus virginiana
Koeleruteria paniculata
Ligustrum amurense
Magnolia acuminata
Magnolia kobus
Magnolia virginiana
Magnolia x loebneri
Magnolia x soulangiana
Myrica pensylvanica
Nyssa sylvatica
Oxydendrum arboreum
Phellodendron amurense
Potentilla fruticosa
Prunus maritima
Prunus sargentii
Quercus acutissima
Quercus alba
Quercus bicolor
Quercus rubra
Rhus aromatica 'Gro-Low'
Rhus chinensis
Rhus copallina

Rosa rugosa
Sciadopitys verticillata
Sophora japonica
Sorbus alnifolia
Syringa meyeri 'Palibin'
Syringa microphylla
Syringa patula 'Miss Kim'
Syringa reticulata
Taxodium distichum
Taxus baccata 'Repandens'
Taxus cuspidata
Taxus x media cultivars
Ulmus parvifolia
Vaccinium corymbosum
Viburnum dentatum
Viburnum prunifolium
Viburnum sieboldii
Zelkova serrata

WIND

Abies concolor
Acanthopanax sieboldianus
Acer ginnala
Acer pseudoplatanus
Comptonia peregrina
Cornus racemosa
Corylus colurna
Cotoneaster divaricatus
Crataegus viridis 'Winter King'
Diervilla sessilifolia
Eucommia ulmoides
Euonymus alatus
Ginkgo biloba
Gymnocladus dioica
Juniperus chinensis
Juniperus conferta
Juniperus virginiana
Ligustrum amurense
Myrica pensylvanica
Pinus cembra
Potentilla fruticosa
Prunus maritima
Pseudotsuga menziesii
Ptelea trifoliata
Pyrus calleryana cultivars
Quercus alba
Quercus bicolor
Rhus aromatica 'Gro-Low'
Rosa rugosa
Symphoricarpos x chenaulti
Vaccinium corymbosum
Viburnum lantana 'Mohican'

OCEANSIDE, ROADSIDE OR AERIAL SALT

Acer pseudoplatanus
Amelanchier canadensis
Arctostaphylos uva-ursi
Aronia arbutifolia
Aronia melanocarpa
Chamaecyparis pisifera
Clethra alnifolia
Clethra barbinervis
Comptonia peregrina
Cotoneaster adpressus
Cotoneaster divaricatus
Cotoneaster salicifolius
Cupressocyparis leylandii
Halesia carolina
Hydrangea arborescens
Hydrangea macrophylla
Ilex glabra
Juniperus chinensis
Juniperus conferta
Juniperus virginiana
Ligustrum amurense
Myrica pensylvanica
Nyssa sylvatica
Pieris floribunda
Potentilla fruticosa
Prunus maritima
Quercus alba
Rhus aromatica 'Gro-Low'
Rhus chinensis
Rhus copallina
Rosa rugosa
Sophora japonica
Spiraea x bumalda 'Anthony Waterer'
Spiraea x vanhouttei
Taxus cuspidata
Ulmus parvifolia
Vaccinium corymbosum
Viburnum dentatum

TOLERANT OF PH 4.5 OR LOWER

Arctostaphylos uva-ursi
Chamaecyparis thyoides
Comptonia peregrina
Hydrangea macrophylla
Ilex crenata
Ilex glabra
Ilex pedunculosa
Ilex verticillata
Ilex x meserveae hybrids
Kalmia angustifolia
Kalmia latifolia
Myrica pensylvanica
Vaccinium corymbosum

APPENDIX 2: (continued)

TOLERANT OF PH 5.0

Abies cilicica
Abies concolor
Abies homolepis
Acer buergerianum
Acer rubrum
Acer triflorum
Amelanchier arborea
Amelanchier canadensis
Carpinus caroliniana
Chamaecyparis obtusa
Chamaecyparis pisifera
Chionanthus virginicus
Clethra alnifolia
Enkianthus campanulatus
Forsythia suspensa
Fothergilla major
Halesia carolina
Hammamelis mollis
Hammamelis vernalis
Hammamelis virginiana
Hammamelis x intermedia
 'Arnold Promise'
Juniperus virginiana
Magnolia acuminata
Magnolia stellata
Magnolia virginiana
Magnolia x soulangiana
Malus species
Nyssa sylvatica
Oxydendrum arboreum
Pieris floribunda
Pinus cembra
Pinus strobus
Pterostyrax hispida
Quercus acutissima
Quercus alba
Quercus bicolor
Quercus palustris
Quercus phellos
Quercus rubra
Rhododendron species & cultivars
Stewartia koreana
Stewartia pseudocamellia
Styrax japonica
Taxodium distichum
Viburnum prunifolium

TOLERANT OF PH 7.5 OR HIGHER

Abies concolor
Acanthopanax sieboldianus
Acer buergerianum
Acer campestre
Acer ginnala
Acer griseum
Acer palmatum
Acer pseudoplatanus
Acer tataricum
Acer triflorum
Aesculus pavia
Alnus glutinosa
Alnus incana
Amelanchier arborea
Amelanchier canadensis
Amelanchier laevis
Aralia spinosa
Berberis julianae
Berberis verruculosa
Berberis x mentorensis
Carpinus betulus
Cercidiphyllum japonicum
Chionanthus retusus
Chionanthus virginicus
Cladrastis lutea
Cornus kousa
Cornus mas
Cornus officinalis
Cornus racemosa
Cornus x 'Stellar' series
Corylus colurna
Cotinus coggygia
Cotinus obovatus
Cotoneaster adpressus
Cotoneaster divaricatus
Cotoneaster salicifolius
Crataegus viridis 'Winter King'
Diervilla sessilifolia
Eucommia ulmoides
Euonymus alatus
Evodia daniellii
Forsythia intermedia
Forsythia suspensa
Ginkgo biloba
Gymnocladus dioica
Hammamelis vernalis
Hammamelis virginiana
Hovenia dulcis
Hydrangea arborescens
Hydrangea macrophylla
Hydrangea paniculata
Hydrangea quercifolia
Juniperus chinensis
Juniperus conferta
Juniperus virginiana
Koelreuteria paniculata
Kolkwitzia amabilis
Ligustrum amurense
Maackia amurensis
Magnolia acuminata
Magnolia kobus
Magnolia stellata
Magnolia x loebneri
Malus species
Ostrya virginiana
Phellodendron amurense
Picea omorika
Picea orientalis
Pinus cembra
Pinus koraiensis
Pinus parviflora
Pinus strobus
Potentilla fruticosa
Prunus maritima
Prunus sargentii
Prunus subhirtella 'Autumnalis'
Pseudotsuga menziesii
Ptelea trifoliata
Pyrus calleryana cultivars
Quercus bicolor
Quercus phellos
Rhus aromatica 'Gro-Low'
Rhus chinensis
Rhus copallina
Rosa rugosa
Sophora japonica
Sorbus alnifolia
Spiraea x bumalda 'Anthony Waterer'
Spiraea x vanhouttei
Stephanandra incisa 'Crispa'
Symphoricarpos x chenaultii
Syringa meyeri 'Palibin'
Syringa microphylla
Syringa patula 'Miss Kim'
Syringa reticulata
Taxodium distichum
Ulmus parvifolia
Viburnum dentatum
Viburnum farreri
Viburnum lantana 'Mohican'
Viburnum plicatum f. *tomentosum*
Viburnum prunifolium
Viburnum rhytidophyllum
Viburnum sargentii
Viburnum sieboldii
Viburnum trilobum
Viburnum wrightii
Viburnum x judii
Viburnum x rhytidophylloides
Weigela florida

APPENDIX 2: (continued)

NATIVE SPECIES

Acer rubrum
Aesculus parviflora
Aesculus pavia
Amelanchier species
Aralia spinosa
Arctostaphylos uva-ursi
Aronia species
Betula nigra
Calycanthus floridus
Carpinus caroliniana
Chamaecyparis thyoides
Chionanthus virginicus
Cladrastus kentukea
Clethra alnifolia
Comptonia peregrina
Cornus racemosa
Cotinus obovatus
Cratageus viridis
Diervilla sessifolia
Fothergilla major
Gymnocladus dioicus
Halesia carolina
Hammamelis vernalis
Hammamelis virginiana
Hydrangea arborescens
Hydrangea quercifolia
Ilex glabra
Ilex verticillata
Itea virginica
Juniperus virginiana
Kalmia angustifolia
Kalmia latifolia
Magnolia acuminata
Magnolia virginiana
Myrica pensylvanica
Nyssa sylvatica
Ostrya virginiana
Oxydendrum arboreum
Pinus strobus
Prunus maritima
Quercus alba
Quercus bicolor
Quercus palustris
Quercus phellos
Quercus rubra
Rhododendron species
Rhus aromatica
Rhus copallina
Rhus copallina
Taxodium distichum
Vaccinium corymbosum
Viburnum dentatum
Viburnum prunifolium
Viburnum trilobum
Xanthorrhiza simplissima

USEFUL BENEATH POWER LINES

Acer buergerianum
Acer campestre
Acer ginnala
Acer tataricum
Alnus glutinosa
Alnus incana
Amelanchier canadensis
Amelanchier laevis
Carpinus caroliniana
Chionanthus retusus
Cornus kousa
Cornus mas
Cornus officinalis
Cornus racemosa
Cornus x 'Stellar' series
Cotinus coggygria
Cratageus viridis 'Winter King'
Enkianthus campanulatus
Evodia daniellii
Hammamelis mollis
Hammamelis vernalis
Hammamelis virginiana
Hammamelis x *intermedia*
 'Arnold Promise'
Hovenia dulcis
Hydrangea paniculata
Ilex pedunculosa
Koelreuteria paniculata
Maackia amurensis
Magnolia stellata
Magnolia virginiana
Magnolia x *loebneri*
Magnolia x *soulangiana*
Malus species
Ostrya virginiana
Parrotia persica
Prunus maackii
Prunus maritima
Prunus sargentii
Prunus subhirtella 'Autumnalis'
Ptelea trifoliata
Pterostyrax hispida
Pyrus calleryana cultivars
Sorbus alnifolia
Stewartia koreana
Stewartia pseudocamellia
Styrax japonica
Syringa reticulata

URBAN CONDITIONS

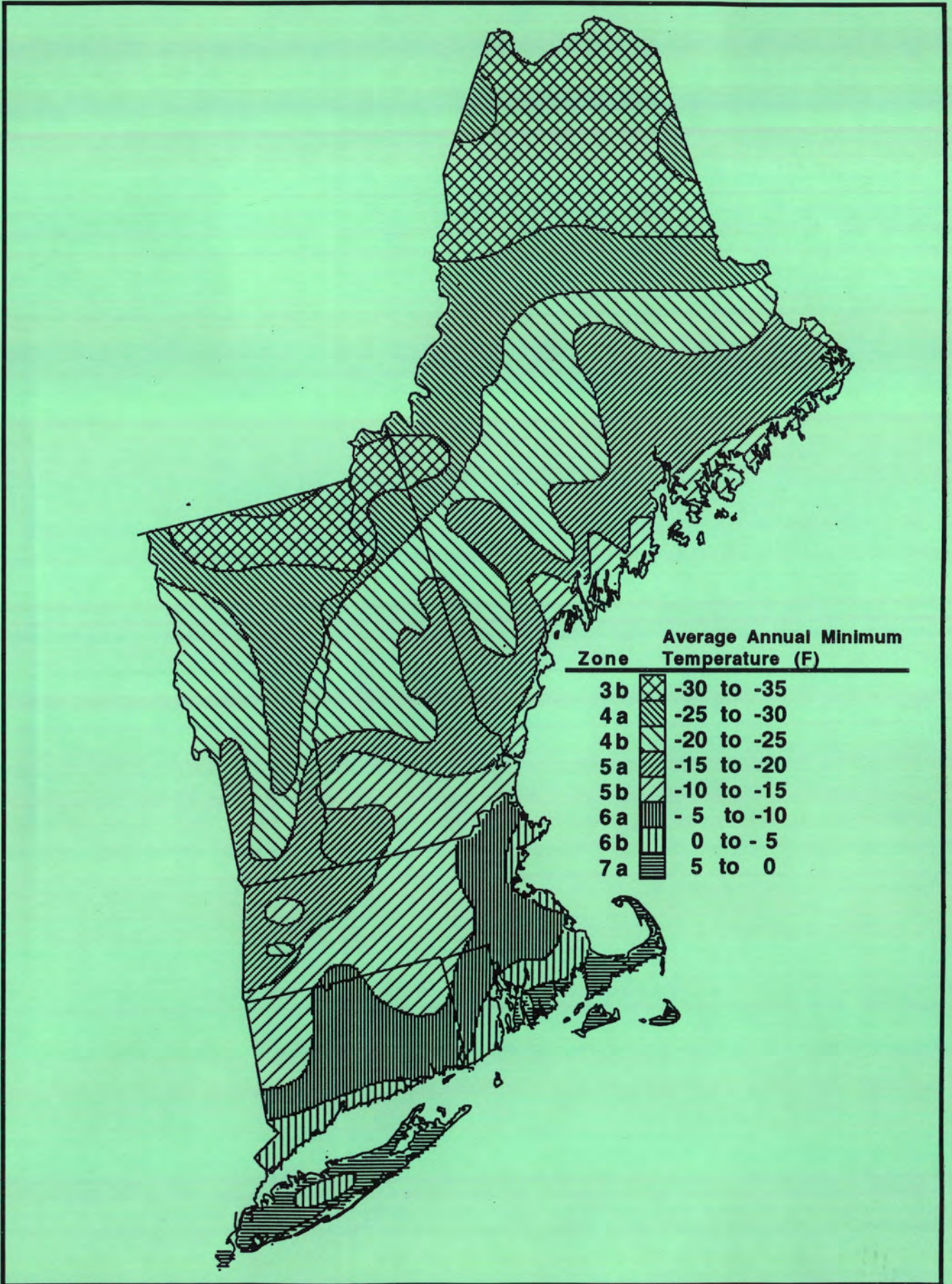
Abies concolor
Acer buergerianum
Acer campestre
Acer ginnala
Acer pseudoplatanus
Acer rubrum
Acer tataricum
Aesculus parviflora
Aesculus pavia
Alnus glutinosa
Amelanchier canadensis
Betula nigra
Carpinus betulus
Carpinus caroliniana
Cercidiphyllum japonicum
Chamaecyparis nootkatensis
Cladrastis lutea
Corylus colurna
Cratageus viridis 'Winter King'
Eucommia ulmoides
Ginkgo biloba
Gymnocladus dioicus
Koelreuteria paniculata
Maackia amurensis
Magnolia stellata
Magnolia x *soulangiana*
Malus species
Nyssa sylvatica
Ostrya virginiana
Phellodendron amurense
Pyrus calleryana cultivars
Quercus acutissima
Quercus bicolor
Quercus palustris
Quercus phellos
Quercus rubra
Sophora japonica
Sorbus alnifolia
Syringa reticulata
Taxus cuspidata
Ulmus parvifolia
Zelkova serrata

APPENDIX 2: (continued)

BEST PLANTED IN SPRING

Acer griseum
Acer rubrum
Betula nigra
Carpinus betulus
Carpinus caroliniana
Cercidiphyllum japonicum
Cladrastis lutea
Cornus racemosa
Fagus sylvatica
Halesia carolina
Ilex crenata
Ilex glabra
Ilex pedunculosa
Ilex verticillata
Ilex x meserveae hybrids
Kalmia angustifolia
Kalmia latifolia
Koelreuteria paniculata
Magnolia acuminata
Magnolia kobus
Magnolia stellata
Magnolia virginiana
Magnolia x loebneri
Magnolia x soulangiana
Malus species
Nyssa sylvatica
Parrotia persica
Pyrus calleryana cultivars
Quercus acutissima
Quercus alba
Quercus bicolor
Quercus phellos
Quercus rubra
Rhododendron species & cultivars
Stewartia koreana
Zelkova serrata

USDA PLANT HARDINESS ZONE





The Rhode Island Nurserymen's Learning Landscape has been created on the University of Rhode Island campus through the generosity of the Rhode Island Nurserymen's Association. The Learning Landscape and Sustainable Landscape are located adjacent to the Cooperative Extension Center and Plant Science Greenhouses, just west of Upper College Road at the north end of campus. The public is welcome at all times, and the gardens may be reserved for special events by prior arrangement with the Cooperative Extension Center (401-792-2900).

Directions to the Rhode Island Nurserymen's Learning Landscape:

From the North:

Travel south on I-95 to exit 9, Rt. 4 south. Travel south on Rt. 4, onto Rt. 1 south and turn right on 138 west. Travel 3.5 miles to Kingston and turn right at the second light, onto Upper College Road, and travel 3/4 miles to Alumni Avenue and the Learning Landscape on your left, across from the Fine Art Building.

From the East:

On I-95 from the Cape and southeastern Massachusetts travel to I-95 south and follow directions from the north, above. On Rt. 24 from eastern Rhode Island travel west to Rt. 138 and follow over the bridges to Rt. 1 south. Continue west on 138 to Kingston and follow the directions below.

From the South and West:

Travel north on I-95 from Connecticut to Exit 3 in Rhode Island. Exit onto 138 east and travel 14 miles to Kingston. Turn left at the first light in Kingston, onto Upper College Road, and travel 3/4 miles to Alumni Avenue and the Learning Landscape on your left, across from the Fine Art Building.



Cooperative Extension
U.S. Department of Agriculture
The University of Rhode Island
Kingston, RI 02881-0804

Address Correction Requested

Official Business

PENALTY FOR PRIVATE USE, \$300