
TREES, SHRUBS AND WOODY VINES

James B. Calkins

Introduction

Trees, shrubs and woody vines represent the woody members of the plant world. The terms “tree”, “shrub” and “vine” are non-scientific general descriptive words with no well-defined specific meaning. The American Standards for Nursery Stock, which is included with this manual, gives some definition to the terms, but in general, a “tree” is understood to be a woody plant approximately six feet to over 100 feet in height at maturity with most major branches derived from a single erect stem. Variations can include a two to five stem clump or a multi-stem form of these same species. Shrubs can be defined as almost always having branches deriving from multiple stems and generally under 15 to 20 feet in height. Vines are highly apically dominant plants, generally with few side branches. Vines have extensive, but flexible terminal growth that needs support to stay upright.

The term “Invasive Species” has been used in the industry in recent years and can be ambiguous. It generally has a negative connotation and sometimes can be confused with the concept of “non-native” plants. These two terms do not mean the same thing and should not be substituted for one another. The Minnesota Department of Agriculture has developed a list of regulated plants it considers “invasive and a threat to native environments”. This list is called the “Noxious Weeds List”, which contains both traditional herbaceous weed species as well as some woody landscape species. Nursery professionals need to be aware of the rules and regulations surrounding these plants. In addition, the MNLA has developed a policy statement concerning non-native, invasive species. Refer to the chapter on Environmental Stewardship Part II for this information. Good nursery and landscape practices should correspond with good environmental practices, including the sale and use of invasive plants. Be aware of, and practice, the “right plant in the right site” concept.

Woody plants can be divided into two major categories: Angiosperms, which are generally flowering plants, and gymnosperms, which are generally cone bearing plants. Angiosperms typically

have broad leaves, flowers, variable fruit, and many, but not all, are deciduous or lose their leaves during a dormant period, usually during winter. Most gymnosperms have narrow leaves called needles, are cone-bearing, and are evergreen. Again, there are notable exceptions to these generalizations. The term “woody” means that the cells of the stems and branches contain ‘lignin’ which serves as a support structure and gives a permanence to branches even when the plant dies, whereas “herbaceous” plants contain little or no lignin and collapse as soon as the plant dies or goes dormant.

Knowledge of a plant’s classification, characteristics, and history or native habitat is essential to its production in the nursery and to its proper utilization in the landscape. Professional nursery growers, retailers, landscape architects, designers and landscape contractors should become familiar with proper nomenclature, plant identification, and the wealth of diversity among woody plants.

Plant Identification

Plant identification begins with careful observation. Although visual observations of the morphological characteristics of stems, buds, leaves, flowers, and fruits may be the most useful, all human senses should be used in plant identification. See the white, exfoliating bark of the paper birch (*Betula papyrifera*), the horseshoe-shaped leaf scar of the amur cork tree (*Phellodendron amurense*), or the large, round, purple buds of the scarlet elder (*Sambucus pubens*). Feel the prickly foliage of the Chinese juniper (*Juniperus chinensis*), the soft, fuzzy or pubescent twigs of the staghorn sumac (*Rhus typhina*), or the sharp ridged thorns of the rugosa rose (*Rosa rugosa*). Smell the pleasantly scented foliage of the savin juniper (*Juniperus sabina*), the acrid aroma of the fragrant sumac (*Rhus aromatica*), or the spicy scented blossoms of the clove currant (*Ribes odoratum*). Hear the distinctive rustle of quaking aspen (*Populus tremuloides*) leaves. Chew the twigs of the sweet birch (*Betula lenta*) to discern their distinct wintergreen taste. Many excellent references are available to learn the important identifying characteristics of plants, but

also, strive to discover new characteristics, which help personalize the identification. Once familiar with the common plants available in the industry, continue to search for and learn about new plants.

The process of learning plant identification and culture should be an ongoing process. Become excited about plant materials, always observing where particular plants are growing well and where they are not, and under what conditions. Whenever possible, observe native, undisturbed plant communities to discern site requirements and understand natural plant associations. Always be on the lookout for new introductions or unfamiliar plant materials.

Plant Selection

Selection of plant materials should never be conducted in sheer nescience, but rather on a working understanding of site and cultural requirements. When selecting plant material, consider native plants which are adapted to existing environmental conditions. Then consider materials which are found in similar environments from other regions and have been tested locally. However, most urban landscapes, in fact most landscapes in general, have been disturbed and may no longer be appropriate for previously indigenous species. Several factors must be considered when selecting plant materials for specific sites: winter temperature or cold hardiness, summer temperature or heat tolerance, humidity, wind, exposure to sun or shade, air drainage, precipitation or drought and moisture tolerance, soil type, drainage, pH tolerance, disease and insect resistance, pollution tolerance, longevity, salt tolerance, fertility requirements, growth habit including height, form, plus aesthetic characteristics such as foliage color and texture, flowers, fruits, and fall color. In addition to knowing plant names, it is also important to know the environmental requirements of each plant. It is also vital to be knowledgeable of the cultural requirements of plant materials so this information can be passed on to customers and so plants can be matched with site conditions. Knowledgeable landscape designers and architects are better equipped to create naturally aesthetic, functional design concepts that become successful landscapes and that are sustained for years with minimal maintenance. Educated customers are also more likely to have success with the plants they purchase.

Diversity should be an important component in the selection of landscape plants. Diversity is, however, lacking in most landscapes today. Many native plants

or introduced species can no longer be recommended or planted because of potential disease problems, large size and perceived characteristics such as being structurally weak or "messy". In fact, some city ordinances prohibit the planting of certain species even though they are ubiquitous in native stands and many existing landscapes. Some plant species are unavailable for landscape use because they are relatively unknown, resulting in low demand, or because their production and cultural requirements are poorly understood which limits their availability. Familiarity and production problems associated with plants that should be incorporated into landscape designs and production schedules can be addressed through education and research. Attitudes regarding particular plant characteristics and the appropriateness of using certain plants in the landscape are more difficult to address. Although new plants become available to growers, to landscape architects and designers, and to the public each year through plant selection and breeding programs, the variety of plant material actually grown and used is quite limited. This lack of diversity leads to "standard" landscape designs that lack uniqueness, and production becomes limited to easily produced species. This results in the exclusion of the more interesting species, and the planting of near monocultures that increase the potential for serious insect or disease problems such as Dutch Elm Disease. These concerns should be addressed by increasing plant diversity rather than by limiting it. Yes, cottonwood does produce annoying seeds or "cotton", and it drops twigs and branches. On the other hand, cottonwood is a native species that is well adapted to the Minnesota environment and is tolerant of tough sites. It has a valuable place in the landscape, perhaps not in the front yard of every home, but a valuable place just the same. Nearly every plant that exists has some characteristic that might be considered undesirable. Even the revered oak produces "messy" acorns and drops leaves late in the season after the raking should be done. The extremes of this trend include the desire for fruitless selections and more recent concerns about pollen production and allergies. Fruitlessness involves the selection of sterile plants or males forms of deciduous species. Avoidance of pollen favors the selection of female plants. In the absence of sterile forms, this selection process could eliminate some excellent species from landscape use. Rather than excluding plants from landscape use, diversity should be promoted through continued selection and production of new varieties and potentially valuable species not currently grown. Plants should be matched with site conditions and

design requirements. Just because a plant is easy to grow, or has attractive flowers, or doesn't produce seeds, does not make it the best plant, or even a good plant, for every site.

Plant Tables 1 Through 17

Tables of deciduous trees, gymnosperms, native deciduous shrubs, introduced shrubs, and vines are organized alphabetically in this chapter by scientific name and height. Tables 1 through 17 include the common name, information on plant height at maturity, tolerances to shade, moisture, drought, pH, and whether the plant has showy flowers, fruits, or fall color. Code descriptions used in Tables 1 through 17 are as follows:

Shaded Block = Specific Tolerance

Shaded Block = Displays Fruit or Seed

B = Blue/Purple

E = Evergreen

O = Orange

P = Pink

R = Red

W = White

Y = Yellow.

All of the plants that will grow in Minnesota are not listed as these tables serve as a foundation for further learning. Some cultivars have been selected from the many plant species listed, however, most cultivars have not been listed. Each table provides additional lines for individual professionals to add their favorite plants, highly used plant material and/or other plants not listed in the tables.

The MNLA Trees and Shrubs Catalog, which is included with this manual, and the many references listed at the end of this chapter provide additional information on specific and new varieties. The nursery and landscape professional needs to be well informed about plant material and must be on the constant lookout for new materials to learn about, to propagate, to grow, and to use.

Table 1. Deciduous Trees over 15 Meters (50 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<i>Acer x freemanii</i> (Freeman Maple)					Y,R		Y,O,R
<i>Acer saccharinum</i> (Silver Maple)					Y,O		Y
<i>Acer saccharum</i> (Sugar Maple)							Y,O,R
<i>Acer saccharum</i> var. <i>nigrum</i> (Black Maple)							Y,O,R
<i>Carya glabra</i> (Pignut Hickory)							Y
<i>Carya laciniosa</i> (Shellbark Hickory)							Y
<i>Carya ovata</i> (Shagbark Hickory)							Y
<i>Castanea dentata</i> (American Chestnut)							Y
<i>Celtis occidentalis</i> (Common Hackberry)							Y
<i>Fagus grandiflora</i> (American Beech)							Y,O
<i>Fraxinus americana</i> (White Ash)							Y
<i>Fraxinus nigra</i> (Black Ash)							Y
<i>Fraxinus pennsylvanica</i> (Green Ash)							Y
<i>Gleditsia triacanthos</i> (Common Honeylocust)							Y
<i>Gleditsia triacanthos</i> var. <i>inermis</i> (Thornless Honeylocust)							Y
<i>Gymnocladus dioica</i> (Kentucky Coffee Tree)							
<i>Populus alba</i> (White Poplar)							
<i>Populus deltoides</i> (Cottonwood)							
<i>Populus tremula</i> 'Erecta' (Upright European Aspen)							
<i>Quercus alba</i> (White Oak)							R
<i>Quercus bicolor</i> (Swamp White Oak)							Y
<i>Quercus coccinea</i> (Scarlet Oak)							R
<i>Quercus ellipsoidalis</i> (Northern Pin Oak)							R
<i>Quercus macrocarpa</i> (Bur Oak)							
<i>Quercus mongolica</i> (Mongolian Oak)							
<i>Quercus muhlenbergii</i> (Yellow Chestnut Oak)							Y
<i>Quercus robur</i> (English Oak)							
<i>Quercus rubra</i> (Red Oak)							R
<i>Quercus velutina</i> (Black Oak)							R
<i>Salix alba</i> (White Willow)							
<i>Salix alba</i> 'Tristis' (Golden Weeping Willow)					Y		
<i>Salix amygdaloides</i> (Peach-leaved Willow)							
<i>Salix nigra</i> (Black Willow)							
<i>Tilia americana</i> (American Linden, Basswood)					Y		
<i>Ulmus americana</i> (American Elm)							
<i>Ulmus</i> x (Hybrid Elm)							
<i>Ulmus rubra</i> (Red Elm, Slippery Elm)							
<i>Ulmus thomasii</i> (Rock Elm)							

Table 2. Deciduous Trees 8-15 Meters (25-50 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Acer negundo</u> (Boxelder)							
<u>Acer platanoides</u> (Norway Maple)					Y		Y
<u>Acer rubrum</u> (Red Maple)					R		Y,O,R
<u>Aesculus glabra</u> (Ohio Buckeye)					Y		Y,O
<u>Aesculus hippocastanum</u> (Common Horse Chestnut)					W		
<u>Aesculus sylvatica</u> (Painted Buckeye)					Y,P		Y,O
<u>Aesculus</u> x 'Autumn Splendor' (Autumn Splendor Buckeye)					Y		R
<u>Alnus glutinosa</u> (European Alder)							
<u>Alnus incana</u> (White Alder)							
<u>Betula alleghaniensis</u> (Yellow Birch)							Y
<u>Betula lenta</u> (Sweet Birch)							Y
<u>Betula nigra</u> (River Birch)							Y
<u>Betula papyrifera</u> (Paper Birch)							Y
<u>Betula pendula</u> (European Birch)							Y
<u>Betula platyphylla</u> var. <u>japonica</u> (Japanese White Birch)							Y
<u>Betula populifolia</u> (Gray Birch)							Y
<u>Carya cordiformis</u> (Bitternut Hickory)							Y
<u>Catalpa speciosa</u> (Northern Catalpa)					W		
<u>Cladrastis kentukea</u> (<u>lutea</u>) (American Yellowwood)					W		Y
<u>Diospyros virginiana</u> (Common Persimmon)					W		Y
<u>Fraxinus quadrangulata</u> (Blue Ash)							Y
<u>Ginkgo biloba</u> (Ginkgo)							Y
<u>Halesia carolina</u> (Carolina Silverbell)					W		Y
<u>Halesia monticola</u> (Mountain Silverbell)					W		Y
<u>Juglans cinerea</u> (Butternut)							
<u>Juglans nigra</u> (Eastern Black Walnut)							
<u>Magnolia</u> spp. (Magnolia)					W		
<u>Magnolia acuminata</u> (Cucumbertree Magnolia)					W		
<u>Magnolia tripetala</u> (Umbrella Magnolia)					W		
<u>Malus</u> spp. (Flowering Crabapple)					W,P,R		
<u>Nyssa sylvatica</u> (Black Tupelo, Black Gum)							O,Y,R
<u>Ostrya virginiana</u> (Ironwood, American Hophornbeam)							Y
<u>Phellodendron amurense</u> (Amur Corktree)							Y
<u>Phellodendron sachalinense</u> (Sachalin Corktree)							Y
<u>Populus alba</u> 'Pyramidalis' (Bolleana Poplar)							
<u>Populus balsamifera</u> (Balsam Poplar)							
<u>Populus grandidentata</u> (Bigtooth Aspen)							Y,O
<u>Populus nigra</u> 'Italica' (Lombardy Poplar)							
<u>Populus tremuloides</u> (Quaking Aspen)							Y
<u>Prunus serotina</u> (Black Cherry)					W		Y,R
<u>Pyrus</u> spp. (Pear)					W		Y,O,R
<u>Pyrus</u> 'Summercrisp' (Summercrisp Pear)					W		Y,O,R
<u>Pyrus ussuriensis</u> (Ussurian Pear, Chinese Sand Pear)					W		Y,O,R
<u>Quercus palustris</u> (Pin Oak)							R
<u>Robinia pseudoacacia</u> (Black Locust)					W		
<u>Salix pentandra</u> (Laurel Willow)							
<u>Sorbus</u> spp. (Mountain Ash)					W		Y,O,R
<u>Sorbus alnifolia</u> (Korean Mountain Ash)					W		Y,O,R

Table 2(Continued). Deciduous Trees 8-15 Meters (25-50 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Sorbus aucuparia</u> (European Mountain Ash)					W		Y,O,R
<u>Tilia cordata</u> (Littleleaf Linden)					Y		
<u>Tilia tomentosa</u> (Silver Linden)					W		
<u>Ulmus parvifolia</u> (Chinese Elm, Lacebark Elm)							
<u>Ulmus pumila</u> (Siberian Elm)							

Table 3. Deciduous Trees less than 8 Meters (25 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Acer ginnala</u> (Amur Maple)							Y,O,R
<u>Acer pensylvanicum</u> (Striped Maple)					Y		Y
<u>Acer spicatum</u> (Mountain Maple)					Y		Y,O,R
<u>Acer tataricum</u> (Tatarian Maple)							Y,O,R
<u>Acer triflorum</u> (Three-flowered Maple)							Y,O,R
<u>Acer truncatum</u> (Shantung Maple)							Y,O,R
<u>Betula pumila</u> (Swamp Birch, Bog Birch)							Y
<u>Carpinus caroliniana</u> (Blue Beech)							Y,O,R
<u>Cercis canadensis</u> (Eastern Redbud)					P		
<u>Crataegus</u> spp. (Hawthorn)					W		Y,O
<u>Crataegus ambigua</u> (Russian Hawthorn)					W		Y,O
<u>Crataegus crusgalli</u> (Cockspur Hawthorn)					W		Y,O
<u>Crataegus crusgalli</u> var. <u>inermis</u> (Thornless Cockspur Hawthorn)					W		Y,O
<u>Crataegus mollis</u> (Downy Hawthorn)					W		Y,O
<u>Crataegus punctata</u> (Dotted Hawthorn)					W		Y,O
<u>Crataegus succulenta</u> (Fleshy Hawthorn)					W		Y,O
<u>Elaeagnus angustifolia</u> (Russian Olive)					Y		
<u>Maackia amurensis</u> (Amur Maackia)					W		
<u>Magnolia x loebneri</u> (Loebner Magnolia)					W		
<u>Magnolia stellata</u> (Star Magnolia)					W		
<u>Malus</u> spp. (Flowering Crabapple)					P,R,W		
<u>Prunus americana</u> (American Plum)					W		
<u>Prunus armeniaca</u> var. <u>mandshurica</u> (Manchurian Apricot)					W		Y,O
<u>Prunus cerasus</u> (Sour Cherry)					W		
<u>Prunus maackii</u> (Amur Chokecherry)					W		
<u>Prunus nigra</u> (Canada Plum)					W		
<u>Prunus pensylvanica</u> (Pin Cherry)					W		Y,O,R
<u>Prunus virginiana</u> (Common Chokecherry)					W		R
<u>P. v. melanocarpa</u> 'Canada Red' (Canada Red Chokecherry)					W		
<u>Ptelea trifoliata</u> (Common Hoptree)							
<u>Pyrus fauriei</u> (Fauriei Pear, Korean Wild Pea Pear)					W		O,R
<u>Salix</u> spp. (Willow)					Y		
<u>Salix discolor</u> (Pussy Willow)					Y		
<u>Sorbus americana</u> (American Mountain Ash)					W		Y,O,R
<u>Sorbus decora</u> (Showy Mountain Ash)					W		Y,O,R
<u>Syringa pekinensis</u> (Pekin Lilac)					W		
<u>Syringa reticulata</u> (Japanese Tree Lilac)					W		

Table 4. Gymnosperm Trees over 15 Meters (50 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Picea abies</u> (Norway Spruce)							
<u>Pinus nigra</u> (Austrian Pine)							
<u>Pinus ponderosa</u> (Ponderosa Pine)							
<u>Pinus ponderosa</u> var. <u>scopulorum</u> (Rocky Mountain Ponderosa Pine)							
<u>Pinus resinosa</u> (Norway Pine, Red Pine)							
<u>Pinus strobus</u> (Eastern White Pine)							

Table 5. Gymnosperm Trees 8-15 Meters (25-50 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Abies balsama</u> (Balsam Fir)							
<u>Abies concolor</u> (White Fir)							
<u>Abies fraseri</u> (Fraser Fir)							
<u>Larix decidua</u> (European Larch)							
<u>Larix gmelinii</u> (Dahurian Larch)							
<u>Larix kaempferi</u> (Japanese Larch)							
<u>Larix laricina</u> (American Larch, Tamarack)							
<u>Larix sibirica</u> (Siberian Larch)							
<u>Picea engelmannii</u> (Engelmann Spruce)							
<u>Picea glauca</u> (White Spruce)							
<u>Picea glauca</u> var. <u>densata</u> (Black Hills White Spruce)							
<u>Picea glehnii</u> (Sakhalin Spruce)							
<u>Picea omorika</u> (Serbian Spruce)							
<u>Picea pungens</u> (Colorado Spruce)							
<u>Picea pungens</u> var. <u>glauca</u> (Colorado Blue Spruce)							
<u>Picea mariana</u> (Black Spruce)							
<u>Pinus banksiana</u> (Jack Pine)							
<u>Pinus cembra</u> (Swiss Stone Pine)							
<u>Pinus densiflora</u> (Japanese Red Pine)							
<u>Pinus flexilis</u> (Limber Pine)							
<u>Pinus koraiensis</u> (Korean Pine)							
<u>Pinus mugo</u> (Mugo Pine)							
<u>Pinus peuce</u> (Macedonian Pine, Balkan Pine)							
<u>Pinus sylvestris</u> (Scotch Pine)							
<u>Pinus wallichiana</u> (Himalayan Pine)							
<u>Pseudotsuga menziesii</u> var. <u>glauca</u> (Rocky Mtn. Douglas Fir)							
<u>Taxodium distichum</u> (Bald Cypress)							
<u>Thuja occidentalis</u> (Eastern White Cedar, American Arborvitae)							
<u>Thuja occidentalis</u> 'Pyramidalis' (Pyramidal Arborvitae)							
<u>Thuja occidentalis</u> 'Wintergreen' (Wintergreen Arborvitae)							
<u>Thuja occidentalis</u> 'Techny' (Techny Arborvitae)							
<u>Tsuga canadensis</u> (Canada Hemlock)							

Table 6. Gymnosperm Trees Less than 8 Meters (25 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<i>Chamaecyparis pisifera filifera</i> (Threadleaf False Cypress)							
<i>Juniperus scopulorum</i> (Rocky Mountain Juniper)							
<i>J. scopulorum</i> 'Blue Heaven' (Blue Heaven Rocky Mtn. Juniper)							
<i>J. scopulorum</i> 'Gray Gleam' (Gray Gleam Rocky Mtn. Juniper)							
<i>J. scopulorum</i> 'Medora' (Medora Rocky Mtn. Juniper)							
<i>J. scopulorum</i> 'Skyrocket' (Skyrocket Rocky Mtn. Juniper)							
<i>J. scopulorum</i> 'Sutherland' (Sutherland Rocky Mtn. Juniper)							
<i>J. scopulorum</i> 'Welchii' (Welchi Rocky Mtn. Juniper)							
<i>J. scopulorum</i> 'Wichita Blue' (Wichita Blue Rocky Mtn. Juniper)							
<i>Juniperus virginiana</i> (Eastern Red Cedar)							
<i>Juniperus virginiana</i> 'Taylor' (Taylor Eastern Red Cedar)							
<i>Metasequoia glyptostroboides</i> (Dawn Redwood)							
<i>Picea glauca</i> 'Conica' (Dwarf White Spruce, Dwarf Alberta Spruce)							
<i>Pinus aristata</i> (Bristlecone Pine)							
<i>Taxus cuspidata</i> var. <i>capitata</i> (Upright Japanese Yew)							
<i>Thuja occidentalis</i> 'Holmstrup' (Holmstrup Arborvitae)							
<i>T. o.</i> 'Wareana' (Wareana Arborvitae, Siberian Arborvitae)							

Table 7. Gymnosperm Shrubs 1-2 Meters (3-6 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Juniperus chinensis</u> (Chinese Juniper)							
<u>Juniperus chinensis</u> 'Hetzii' (Hetzi Chinese Juniper)							
<u>Juniperus chinensis</u> 'Maney' (Maney Chinese Juniper)							
<u>Juniperus chinensis</u> 'Mountbatten' (Mountbatten Chinese Juniper)							
<u>Juniperus chinensis</u> 'Pfitzeriana' (Pfitzer Chinese Juniper)							
<u>Juniperus chinensis</u> 'Sea Green' (Sea Green Chinese Juniper)							
<u>Juniperus communis</u> (Common Juniper)							
<u>J. c. depressa</u> 'AmiDak' (Blueberry Delight™ Common Juniper)							
<u>Juniperus sabina</u> (Savin Juniper)							
<u>Juniperus sabina</u> 'Arcadia' (Arcadia Savin Juniper)							
<u>Juniperus sabina</u> 'Blue Danube' (Blue Danube Savin Juniper)							
<u>Juniperus sabina</u> 'Broadmoor' (Broadmoor Savin Juniper)							
<u>Juniperus sabina</u> 'Buffalo' (Buffalo Savin Juniper)							
<u>Juniperus sabina</u> 'Pepin' (Pepin Savin Juniper)							
<u>Juniperus sabina</u> 'Skandia' (Skandia Savin Juniper)							
<u>Juniperus sabina</u> var. <u>tamariscifolia</u> (Tam Savin Juniper)							
<u>Juniperus squamata</u> (Singleseed Juniper)							
<u>J. s.</u> 'Blue Star' (Blue Star Singleseed Juniper)							
<u>J. virginiana</u> 'Grey Owl' (Grey Owl Eastern Redcedar)							
<u>Pinus mugo</u> var. <u>mugo</u> (Dwarf Swiss Mtn. Pine, Dwarf Mugo Pine)							
<u>Taxus canadensis</u> (Canadian Yew)							
<u>Taxus cuspidata</u> (Japanese Yew)							
<u>T. c.</u> 'Cross Spreading' (Cross Spreading Yew)							
<u>Taxus x media</u> (Anglojap Yew)							
<u>Taxus x media</u> 'Taunton' (Taunton Anglojap Yew)							
<u>Thuja occidentalis</u> 'Woodwardii' (Woodward Arborvitae)							

Table 8. Gymnosperm Shrubs less than 1 Meter (3 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<i>Juniperus communis</i> var. <i>depressa</i> (Prostrate Common Juniper)							
<i>J. c.</i> var. <i>depressa</i> 'Petite' (Petite Prostrate Common Juniper)							
<i>Juniperus horizontalis</i> (Creeping Juniper)							
<i>J. h.</i> 'Bar Harbor' (Bar Harbor Creeping Juniper)							
<i>J. h.</i> 'Blue Chip' (Blue Chip Creeping Juniper)							
<i>J. h.</i> 'Hughes' (Hughes Creeping Juniper)							
<i>J. h.</i> 'Plumosa' Andorra Creeping Juniper)							
<i>J. h.</i> 'Prince of Wales' (Prince of Wales Creeping Juniper)							
<i>J. h.</i> 'Webberi' (Webber Creeping Juniper)							
<i>J. h.</i> 'Wiltoni' (Wilton Carpet Creeping Juniper)							
<i>J. h.</i> 'Wisconsin' (Wisconsin Creeping Juniper)							
<i>Juniperus procumbens</i> (Japanese Garden Juniper)							
<i>Microbiota descussata</i> (Siberian Carpet, Russian Cypress)							
<i>Picea abies</i> 'Nidiformis' (Birdsnest Norway Spruce)							
<i>Pinus mugo</i> var. <i>pumilio</i> (Prostrate Mugo Pine)							
<i>Taxus cuspidata</i> 'Nana' (Dwarf Japanese Yew)							
<i>Thuja occidentalis</i> 'Canadian Green' (Canadian Green Arborvitae)							
<i>Thuja occidentalis</i> 'Hetz Midget' (Hetz Midget Arborvitae)							
<i>Thuja occidentalis</i> 'Little Giant' (Little Giant Arborvitae)							

Table 9. Native Deciduous Shrubs over 3 Meters (10 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Alnus rugosa</u> (Speckled Alder)							
<u>Amelanchier</u> spp. (Juneberry, Serviceberry)					W		Y,O,R
<u>Amelanchier arborea</u> (Downy Serviceberry)					W		Y,O,R
<u>Amelanchier x grandiflora</u> (Apple Serviceberry)					W		Y,O,R
<u>Amelanchier laevis</u> (Allegheny Serviceberry)					W		Y,O,R
<u>Cephalanthus occidentalis</u> (Buttonbush)					W		
<u>Cornus alternifolia</u> (Pagoda Dogwood)					W		R
<u>Elaeagnus umbellata</u> (Autumn-olive)					W		
<u>Euonymus atropurpurea</u> (Wahoo)							R
<u>Hamamelis virginiana</u> (Common Witchhazel)					Y		Y
<u>Rhus copallina</u> (Shining Sumac, Flameleaf Sumac)					Y		R
<u>Rhus glabra</u> (Smooth Sumac)					Y		O,R
<u>Rhus typhina</u> (Staghorn Sumac)					Y		O,R
<u>Rhus typhina</u> 'Laciniata' (Cutleaf Staghorn Sumac)					Y		O,R
<u>Rhus vernix</u> (Poison Sumac)							R
<u>Shepherdia argentea</u> (Silver Buffalo Berry)							
<u>Staphylea trifolia</u> (American Bladdernut)					W		
<u>Viburnum lentago</u> (Nannyberry Viburnum)					W		P,R
<u>Viburnum trilobum</u> (American Highbush Cranberry)					W		R
<u>Zanthoxylum americanum</u> (Prickly Ash)							

Table 10. Native Deciduous Shrubs 2-3 Meters (6-10 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Amelanchier alnifolia</u> (Saskatoon Serviceberry)					W		Y,O,R
<u>Cornus racemosa</u> (Gray Dogwood)					W		R
<u>Cornus sericea</u> (Redosier Dogwood)					W		R
<u>Cornus sericea</u> 'Cardinal' (Cardinal Redosier Dogwood)					W		R
<u>Cornus sericea</u> 'Flaviramea' (Yellowtwig Dogwood)					W		Y
<u>Cornus rugosa</u> (Round-leaved Dogwood)					W		Y
<u>Elaeagnus commutata</u> (Silverberry)					Y		
<u>Ilex verticillata</u> (Winterberry)							
<u>Nemopanthus mucronatus</u> (Mountain Holly)							
<u>Physocarpus opulifolius</u> (Common Ninebark)					W		
<u>Sambucus canadensis</u> (American Elder)					W		
<u>Sambucus pubens</u> (Scarlet Elder)					W		
<u>Viburnum dentatum</u> (Arrowwood Viburnum)					W		

Table 11. Native Deciduous Shrubs 1-2 Meters (3-6 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Amelanchier stolonifera</u> (Running Serviceberry)					W		Y,O,R
<u>Aronia melanocarpa</u> (Black Chokeberry)					W		O,R
<u>Cornus sericea</u> 'Isanti' (Isanti Redosier Dogwood)					W		R
<u>Corylus americana</u> (American Hazel)							Y
<u>Dirca palustris</u> (Atlantic Leatherwood)					Y		
<u>Lonicera canadensis</u> (Fly Honeysuckle)					Y		
<u>Physocarpus opulifolius</u> 'Intermedius' & 'Nanus' (Dwarf Ninebark)					W		
<u>Potentilla fruticosa</u> (Potentilla)					P,W,Y		
<u>Prunus besseyi</u> (Western Sandcherry)					W		
<u>Prunus pumila</u> (Sandcherry)					W		
<u>Rosa arkansana</u> (Prairie Wild Rose)					P		Y,R
<u>Rosa acicularis</u> (Prickly Rose)					P		
<u>Rosa blanda</u> (Meadow Rose)					P		
<u>Rosa carolina</u> (Pasture Rose)					P		
<u>Rosa woodsii</u> (Wood's Rose)					P		
<u>Shepherdia canadensis</u> (Canadian Buffalo Berry)							
<u>Spiraea alba</u> (Meadowsweet)					W		
<u>Spiraea tomentosa</u> (Steeplebush, Hardhack)					P		
<u>Symphoricarpos albus</u> var. <u>laevigatus</u> (Garden Snowberry)							
<u>Symphoricarpos orbiculatus</u> (Coralberry)					P		
<u>Rhus aromatica</u> (Fragrant Sumac)					Y		Y,O,R
<u>Rhus aromatica</u> 'Grow-low' (Grow-low Fragrant Sumac)					Y		Y,O,R
<u>Ribes americanum</u> (American Wild Black Currant)							Y,R
<u>Ribes cynosbati</u> (Prickly Gooseberry)							
<u>Ribes odoratum</u> (Clove Currant)					Y		O,R
<u>Rubus allegheniensis</u> (Highbush Blackberry)					W		R
<u>Rubus idaeus</u> var. <u>strigosus</u> (American Red Raspberry)					W		
<u>Rubus occidentalis</u> (Black Raspberry)					W		
<u>Rubus parviflorus</u> (Thimbleberry)					W,P		
<u>Viburnum acerifolium</u> (Mapleleaf Viburnum)					W		P
<u>Viburnum rafinesquianum</u> (Downy Arrowwood)					W		Y
<u>V. trilobum</u> 'Compactum' (Compact Amer. Highbush Cranberry)					W		R

Table 12. Native Deciduous Shrubs Less Than 1 Meter (3 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Arctostaphylos uva-ursi</u> (Bearberry) (E)					W		
<u>Betula nana</u> (Dwarf Birch)							Y
<u>Ceanothus americanus</u> (New Jersey Tea, Mountainsweet)					W		
<u>Ceanothus ovatus</u> (Inland Ceanothus)					W		
<u>Comptonia peregrina</u> (Sweet Fern)							
<u>Cornus canadensis</u> (Bunchberry)					W		R
<u>Diervilla lonicera</u> (Dwarf Bush-honeysuckle)					Y		
<u>Epigaea repens</u> (Trailing Arbutus)					W,P		
<u>Fragaria virginiana</u> (Virginia Strawberry)					W		
<u>Fragaria vesca</u> (Woodland Strawberry)					W		
<u>Gaultheria procumbens</u> (Wintergreen)					W		
<u>Toxicodendron radicans</u> (Formerly <u>Rhus radicans</u>) (Poison Ivy)							R
<u>Spiraea nipponica</u> 'Halward's Silver' (Halward's Silver Nippon Spirea)					W		
<u>Vaccinium angustifolium</u> (Lowbush Blueberry)							R
<u>Vaccinium macrocarpon</u> (Large Cranberry)							R

Table 13. Introduced Shrubs Over 3 Meters (10 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Acer ginnala</u> 'Compacta' (Compact Ginnala Maple)							Y,O,R
<u>Aesculus parviflora</u> (Bottlebrush Buckeye)					W		Y
<u>Amelanchier canadensis</u> (Shadblow Serviceberry)					W		Y,O,R
<u>Aralia elata</u> (Japanese Angelica-tree)					W		
<u>Aralia spinosa</u> (Hercule's Club)					W		
<u>Caragana arborescens</u> (Siberian Peashrub)					Y		
<u>Chionanthus virginicus</u> (White Fringetree)					W		
<u>Cotinus ovovatus</u> (American Smoketree)							O,R,Y
<u>Euonymus alatus</u> (Winged Euonymus)							R
<u>Euonymus europaeus</u> (European Euonymus)							Y,R
<u>Hippophae rhamnoides</u> (Sea Buckthorn)					Y		
<u>Lonicera</u> x 'Freedom' (Freedom Honeysuckle)					W		
<u>Philadelphus</u> spp. (Mockorange)					W		
<u>Syringa villosa</u> (Late Lilac)					P		
<u>Syringa vulgaris</u> (Common Lilac)					W,P,B		
<u>Tamarix ramosissima</u> (Five-stamen Tamarix)					P		

Table 14. Introduced Shrubs 2-3 Meters (6-10 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<i>Berberis koreana</i> (Korean Barberry)					Y		R
<i>Clethra alnifolia</i> (Summersweet Clethra)					W		Y
<i>Cornus alba</i> (Tatarian Dogwood)					W		R
<i>Cornus alba</i> 'Argenteo-marginata' (Variegated Dogwood)					W		R
<i>Cornus alba</i> 'Gouchaultii' (Mottled Dogwood)					W		R
<i>Cornus alba</i> 'Sibirica' (Siberian Dogwood)					W		R
<i>Cotinus coggygria</i> (Common Smoketree)					P		
<i>Cotinus coggygria</i> 'Royal Purple' (Royal Purple Smoktree)					P		
<i>Cotoneaster lucidus</i> (Hedge Cotoneaster)							Y,O,R
<i>Cotoneaster multiflorus</i> (Many-flowered Cotoneaster)					W		
<i>C. racemiflorus</i> var. <i>soongoricus</i> (Sungari Redbead Cotoneaster)					W		
<i>Forsythia</i> x 'Meadowlark' (Meadowlark Forsythia)					Y		
<i>Forsythia</i> x 'Northern Sun' (Northern Sun Forsythia)					Y		
<i>Hydrangea paniculata</i> 'Grandiflora' (PeeGee Hydrangea)					W,P		
<i>Ligustrum</i> spp. (Privet)					W		
<i>Lonicera xylosteum</i> (European Fly Honeysuckle)					W		
<i>Lonicera xylosteum</i> 'Hedge King' (Hedge King Honeysuckle)					W		
<i>Myrica pensylvanica</i> (Northern Bayberry)							
<i>Prunus</i> x <i>cistena</i> (Purpleleaf Sandcherry)					P		
<i>Prunus tomentosa</i> (Nanking Cherry)					W		
<i>Prunus triloba</i> (Flowering Plum)					P		
<i>Robinia hispida</i> (Rose Acacia)					P		
<i>Spiraea</i> x <i>cinerea</i> 'Grefscheim' (Grefscheim Spirea)					W		
<i>Spiraea nipponica</i> (Nippon Spirea)					W		
<i>Syringa</i> x <i>chinensis</i> (Chinese Lilac)					P		
<i>Syringa patula</i> 'Miss Kim' (Miss Kim Manchurian Lilac)					P		R
<i>Syringa</i> x <i>prestoniae</i> (Preston Lilac)					P		
<i>Viburnum</i> x 'Emerald Triumph' (Emerald Triumph Viburnum)					W		
<i>Viburnum lantana</i> (Wayfaringtree Viburnum)					W		
<i>Viburnum lantana</i> 'Mohican' (Mohican Wayfaringtree Viburnum)					W		
<i>Viburnum opulus</i> (European Highbush Cranberry)					W		
<i>Viburnum opulus</i> 'Roseum' (Snowball Viburnum)					W		
<i>Viburnum prunifolium</i> (Blackhaw Viburnum)					W		R

Table 15. Introduced Shrubs 1-2 Meters (3-6 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Berberis thunbergii</u> (Japanese Barberry)					Y		Y,O,R
<u>B. t.</u> 'Atropurpurea' (Redleaf Japanese Barberry)					Y		Y,O,R
<u>Buxus microphylla</u> var. <u>koreana</u> (Littleleaf Boxwood)							
<u>Caragana frutex</u> (Russian Peashrub)					Y		
<u>Cornus alba</u> 'Ivory Halo' (Ivory Halo Tatarian Dogwood)					W		R
<u>Diervilla sessilifolia</u> (Southern Bush-honeysuckle)					Y		
<u>Deutzia x lemoinei</u> (Lemoine Deutzia)					W		
<u>Euonymus alatus</u> 'Compactus' (Dwarf Winged Euonymus)							R
<u>E. nanus</u> var. <u>turkestanicus</u> (Upright Dwarf Euonymus)							R
<u>Exochorda serratifolia</u> 'Northern Pearls' (Northern Pearls Pearlshrub)					W		Y
<u>Hydrangea arborescens</u> (Smooth Honeysuckle)					W		
<u>H. arborescens</u> 'Annabelle' (Annabelle Hydrangea)					W		
<u>H. arborescens</u> 'Grandiflora' (Hills of Snow Hydrangea)					W		
<u>Hypericum kalmianum</u> (Kalm's St. John's-wort)					Y		
<u>Lonicera x xylosteoides</u> 'Clavey's Dwarf' (Clavey's Dwarf Honeysuckle)					Y		
<u>L. maximowiczii</u> var. <u>sachalinensis</u> (Sachalin Honeysuckle)					P		Y
<u>Philadelphus x virginialis</u> 'Minnesota Snowflake' (Minnesota Snowflake Virginal Mockorange)					W		
<u>Prinsepia sinensis</u> (Cherry Prinsepia)					Y		
<u>Prunus japonica</u> (Japanese Bush Cherry)					W,P		
<u>Prunus maritima</u> (Beach Plum)					W		
<u>Prunus tenella</u> (Russian Almond)					R		O
<u>Rhododendron x kosteranum</u> (Mollis Hybrid Azalea)					O,Y		
<u>Rhododendron x hybrids</u> (Marjatta Hybrid Rhododendron) (E)					W,P,R		
<u>Rhododendron x hybrids</u> (UM Lights Series Azaleas)					W,O,P,Y		
<u>Rhododendron</u> 'PJM' (PJM Rhododendron)					P		
<u>Rhus trilobata</u> (Skunkbush Sumac)					Y		Y,R
<u>Ribes alpinum</u> (Alpine Currant)							
<u>Ribes sativum</u> (Garden Currant)							
<u>Rosa foetida</u> (Austrian Brier Rose)					Y		
<u>Rosa hugonis</u> (Father Hugo's Rose)					Y		
<u>Rosa x 'Nearly Wild'</u> (Nearly Wild Rose)					P		
<u>Rosa primula</u> (Primrose Rose)					Y		
<u>Rosa rubrifolia</u> (Redleaf Rose)					P		
<u>Rosa rugosa</u> (Rugosa Rose)					W,Y,P		Y,O
<u>Rosa rugosa</u> 'Frau Dagmar Hastrup' (Frau Dagmar Hastrup Rugosa Rose)					P		O
<u>Rosa villosa</u> (Apple Rose)					P		
<u>Salix purpurea</u> (Purple Osier Willow)							
<u>Sorbaria sorbifolia</u> (Ural False Spirea)					W		
<u>Spiraea albiflora</u> (Japanese White Spirea)					W		
<u>Spiraea x arguta</u> 'Compacta' (Dwarf Garland Spirea)					W		
<u>Spiraea x billiardii</u> (Billiard Spirea)					P		
<u>Spiraea x bumalda</u> 'Anthony Waterer' (Anthony Waterer Spirea)					P		
<u>Spiraea x bumalda</u> 'Crispa' (Crisp Leaved Spirea)					P		
<u>Spiraea x bumalda</u> 'Froebelii' (Froebel Spirea)					P		
<u>Spiraea x bumalda</u> 'Goldflame' (Goldflame Spirea)					P		
<u>Spiraea fritschiana</u> (Fritschiana Spirea)					W		
<u>Spiraea trilobata</u> 'Fairy Queen' (Fairy Queen Spirea)					W		
<u>Spiraea thunbergii</u> (Thunberg Spirea)					W		

Table 15 (Continued). Introduced Shrubs 1-2 Meters (3-6 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Spiraea x vanhouttei</u> (Vanhoutte Spirea)					W		
<u>Syringa meyeri</u> (Meyer Lilac)					P		
<u>Syringa x prestoniae</u> 'Minuet' (Minuet Preston Lilac)					B		
<u>Viburnum opulus</u> 'Compactum' (Compact European Highbush Cranberry)					W		
<u>Weigela</u> spp. (Weigela)					P		

Table 16. Introduced Shrubs Under 1 Meter (3 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Buxus microphylla</u> 'Wintergreen' (Wintergreen Littleleaf Boxwood) (E)							
<u>Daphne x burkwoodii</u> 'Carol Mackie' (Carol Mackie Burkwood Daphne)					W		
<u>Euonymus fortunei</u> (Wintercreeper Euonymus)							
<u>E. fortunei</u> 'Coloratus' (Purple Wintercreeper Euonymus)							
<u>Hydrangea macrophylla</u> 'Bailmer' (Endless Summer® Bigleaf Hydrangea)					B,P		
<u>Lonicera xylosteum</u> 'Emerald Mound' (Emerald Mound Honeysuckle)					W		
<u>Lycium chinense</u> (Chinese Matrimony Vine)					B		
<u>Mahonia nepens</u> (Creeping Mahonia) (E)					Y		
<u>Pachysandra procumbens</u> (Alleghany Pachysandra)					W		
<u>Pachysandra terminalis</u> (Japanese Spurge)					W		
<u>Paxistima canbyi</u> (Canby Pachystima)							
<u>Philadelphus x 'Miniature Snowflake'</u> (Miniature Snowflake Mockorange)					W		
<u>Polygonum cuspidatum</u> var. <u>compactum</u> (Japanese Fleeceflower)					P		
<u>Rubus subarcticus</u> (Arctic Raspberry)					P		
<u>Spiraea japonica</u> 'Alpina' (Dwarf Japanese Spirea)					P		
<u>Spiraea japonica</u> 'Little Princess' (Little Princess Japanese Spirea)					P		
<u>S. j.</u> 'Shirobana' (Shirobana Japanese Spirea, Peppermint Stick Spirea)					P,W		
<u>Spiraea nipponica</u> 'Snowmound' (Snowmound Spirea)					W		
<u>Xanthoriza simplicissima</u> (Yellowroot)							

Table 17. Woody Vines 3-15 Meters (10-45 Feet).

Genus, Species, Variety (Common Name)	Tolerances				Flowers	Fruit	Fall Color
	Shade	Moisture	Drought	High pH			
<u>Adlumia fungosa</u> (Allegheny Vine, Mountain Fringe)					P		
<u>Apios americana</u> (Groundnut, Potato Bean)					B		
<u>Aristolochia durior</u> (Dutchman's Pipe)					Y		
<u>Campsis radicans</u> (Common Trumpet creeper)					O		
<u>Celastrus scandens</u> (American Bittersweet)							Y
<u>Clematis</u> spp. (Clematis)					W,Y,P,B		
<u>Clematis paniculata</u> (Sweet Autumn Clematis)					W		
<u>Clematis virginiana</u> (Virgin's Bower)					W		
<u>Echinocystis lobata</u> (annual) (Wild Cucumber)					W		
<u>Hedera helix</u> (English Ivy)							
<u>Lonicera</u> spp. (Honeysuckle Vine)					W,Y,O		
<u>Lonicera x brownii</u> (Brown's Honeysuckle Vine)					O		
<u>Lonicera hirsuta</u> (Hairy Honeysuckle Vine)					Y		
<u>Menispermum canadense</u> (Common Moonseed)					Y		
<u>Parthenocissus inserta</u> (Thicket Creeper)							R
<u>Parthenocissus quinquefolia</u> (Virginia Creeper, Woodbine)							R
<u>Parthenocissus tricuspidata</u> (Japanese Creeper, Boston Ivy)							R
<u>Smilax hispida</u> (Bristly Greenbrier)							
<u>Solanum dulcamara</u> (Bitter Nightshade)					B		
<u>Vitis riparia</u> (Riverbank Grape)							
<u>Vinca minor</u> (Periwinkle)					B		
<u>Wisteria floribunda</u> (Japanese Wisteria)					B		
<u>Wisteria macrostachya</u> (Kentucky Wisteria)					B		