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Basement

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Trees



Shrubs

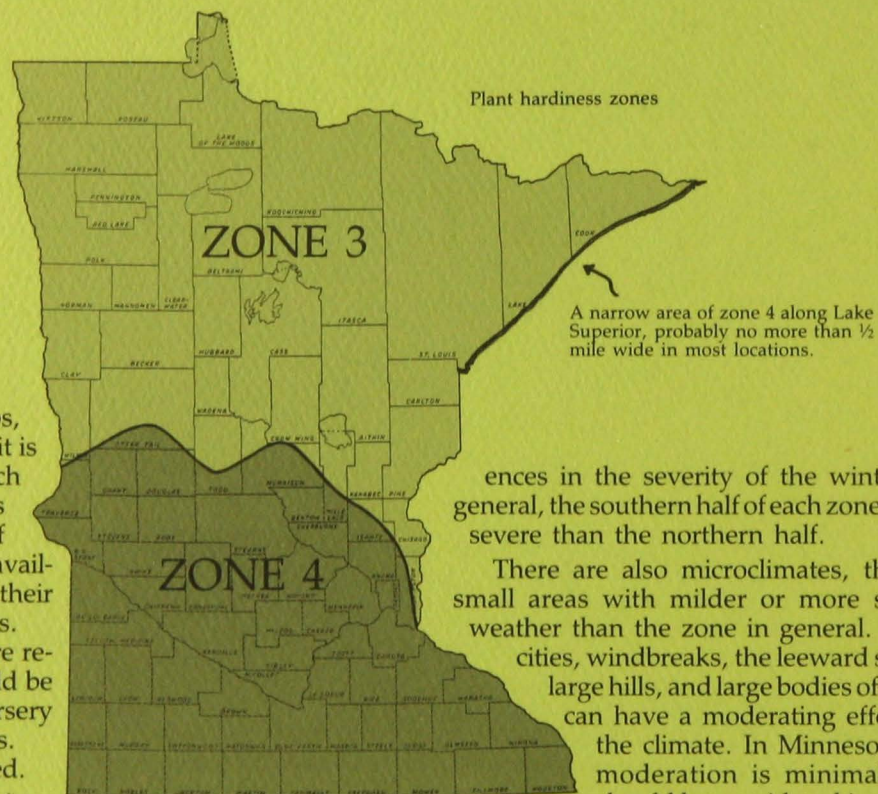
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Vines

FOR MINNESOTA LANDSCAPES

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In choosing trees, shrubs, and vines for landscaping, it is useful to know about each plant's characteristics. This publication provides a brief description of commonly available plants and points out their important merits and faults. Some of the plants listed are relatively new but they should be widely available in the nursery trade in the next few years. Evergreens are not included.

This bulletin is divided into three sections: trees, shrubs, and woody vines. Plants are listed by their common names. The scientific name and the average size at maturity are also given. Plant names that are listed with single quotation marks are cultivars; that is, they are selections of plants that have been propagated by cuttings, budding, or grafting. They are often slightly more expensive than plants started from seed, but they are usually of better quality or have a special characteristic that makes them more desirable than a seedling plant.

In Minnesota, plant hardiness is an important consideration. Study the plant hardiness zone map carefully when ordering nursery stock from sources outside Minnesota. Within zones there are differ-

ences in the severity of the winter. In general, the southern half of each zone is less severe than the northern half.

There are also microclimates, that is, small areas with milder or more severe weather than the zone in general. Large cities, windbreaks, the leeward side of large hills, and large bodies of water can have a moderating effect on the climate. In Minnesota the moderation is minimal, but should be considered in select-

ing plants. Plants that are listed as "trial" are those that will grow in a protected site, but may not always do well. Plants that are listed as "hardy" or "adapted" generally do well in Minnesota's climate.

A companion publication, Extension Folder 298, *Fitting Trees and Shrubs Into the Landscape*, provides a list of plants by size and characteristics. For additional information, local county extension agents, Agricultural Soil Conservation Service personnel, and nursery people are good sources, especially if you need help determining the adaptability of a particular plant to your area. Most plants listed in this bulletin are growing in the University of Minnesota Landscape Arboretum located near Chaska.

Trees

APRICOT

Apricots are fast-growing small trees with a life expectancy of 20 to 30 years. They grow best on a well-drained soil in full sun. Flower buds are often killed during the winter. When this happens there is no fruit or bloom the following year. The attractive white to pink flowers open very early in May and are sometimes killed by spring frosts. Cool, wet weather inhibits bee pollination activities, often resulting in a small amount of fruit set. Since apricot trees require cross-pollination, plant two or more varieties to ensure fruiting. Fruits make excellent preserves or sauce. Autumn foliage is golden yellow. The apricots listed here are the hardiest available. Trial in zone 4.

Manchurian Apricot (*Prunus armeniaca mandshurica*), 20 ft. This is the hardiest of the fruiting apricots.

MANDAN APRICOT (*Prunus armeniaca mandshurica* 'Mandan'), 20 ft., is a vase-shaped tree. Fruits are 1¼ inches in diameter and have a red blush.

MOONGOLD APRICOT (*Prunus armeniaca mandshurica* 'Moongold'), 15 ft., is a University of Minnesota introduction of 1961. The golden fruits are 1 inch in diameter. Moongold and Sungold apricots are often planted as a pair to ensure fruiting.

SCOUT APRICOT (*Prunus armeniaca mandshurica* 'Scout'), 15 ft., is a Canadian introduction of 1937. It has 1½-inch fruits.

SUNGOLD APRICOT (*Prunus armeniaca mandshurica* 'Sungold'), 15 ft., is a University of Minnesota introduction of 1961. Fruits are 1 inch in diameter.

ASH

This tree can tolerate soils with a wide range of moisture and fertility. It grows fast and is long-lived. Female trees can produce numerous seeds which can be a nuisance when they germinate in other parts of the landscape. Nurseries often sell grafted male trees to eliminate this problem.

Black Ash (*Fraxinus nigra*), 40 ft. This native ash grows largely in swamps and wet soils. It has dark green foliage and grows satisfactorily on upland soils. It is the first of the ash to defoliate in the fall. Interest in this species is recent; several selections that hold their leaves longer in the fall have been made in Manitoba and in North Dakota. Zones 3 and 4.



Marshall seedless green ash

Blue Ash (*Fraxinus quadrangulata*), 30-40 ft., is a slow-growing ash with a rounded form and glossy, dark green foliage. The twigs are square in cross section with four corky ridges. Trial in zone 4.

Green Ash (*Fraxinus pennsylvanica*), 50-60 ft., is the most common species of ash planted in shelterbelts, windbreaks, along streets, and on lawns in Minnesota. Although this tree is quite upright when young, it later develops a well-rounded crown. Leaves come out late in the spring and drop soon after the first fall frost. Fall color is yellow. Green ash is very hardy, drought resistant, and alkali tolerant. Male selections are usually planted unless used for shelterbelts and windbreaks. Zones 3 and 4.

KINDRED GREEN ASH (*Fraxinus pennsylvanica* 'Kindred'), is a fast-growing tree with a straight trunk and good foliage. It is seedless. Zones 3 and 4.

MARSHALL SEEDLESS GREEN ASH (*Fraxinus pennsylvanica* 'Marshall Seedless') is an ash that recovers quickly after transplanting. It is broad and has good quality foliage. Zones 3 and 4.



River birch bark

SUMMIT GREEN ASH (*Fraxinus pennsylvanica* 'Summit') is narrower than most seedlings of green ash trees, making it useful for boulevard plantings. At the arboretum, the ash plant bug has been more of a problem on this selection than on other green ash cultivars. Zones 3 and 4.

White Ash (*Fraxinus americana*), 50-60 ft., is a native tree tolerant of dry soils. It is similar to the green ash, but has a purple fall color. The selections Rosehill and Autumn Purple have not been dependably hardy. Minnesota nurseries are beginning to grow trees started from trees native to the area south of Mille Lacs Lake. These should be hardy in zones 3 and 4.

BASSWOOD

(see LINDEN)

BEECH

Beech is a common name applied to two unrelated genera. Both kinds do best on a fertile, moist, well-drained soil. Both are shade tolerant, but grow better with more light.

American Beech (*Fagus grandifolia*), 65 ft. or more. The American beech tree is quite dense and has a shallow root system. It has good quality dark green foliage that turns yellow in the fall. Bark is smooth and gray. Trial on protected sites in zone 4.

Blue Beech (*Carpinus caroliniana*), 20 ft. The blue beech is a native small tree or large shrub with smooth, muscle-like stems that are silvery-gray. Leaves turn orange to red in the autumn. Blue beech is an excellent plant for screening or background planting. Zones 3 and 4.

BIRCH

Most species of birch prefer cool, moist sites. When birches are planted in landscapes where conditions are different from their native habitat, they are likely to suffer stress and may become infested by bronze birch borers. These borers can kill birches within a few years after planting. A northern exposure is better for birch than one to the south or west.

Birch trees should be fertilized in the spring, watered through the summer, and mulched with an organic mulch to keep the soil cool beneath the trees. Keeping birches in good condition minimizes birch borer problems.

European Birch (*Betula pendula*), 30 ft. This white-barked birch is similar to our native paper birch, having the same site requirements, but it is very susceptible to the bronze birch borer. The cultivar Gracilis, commonly called the Cutleaf Weeping European birch is more widely planted than the species. It, too, is very susceptible to borer damage. Zones 3 and 4.

Paper Birch (*Betula papyrifera*) 30-40 ft., is native throughout the state on moist sites and on cool north slopes. The white, papery bark makes this a popular tree for landscaping. This species is susceptible to the bronze birch borer when planted on hot, dry sites or where the soil is likely to become compacted. Zones 3 and 4.

River Birch (*Betula nigra*), 40 ft., is a graceful tree with a rounded crown. The loose, papery bark is reddish brown and darkens as the tree becomes older. This tree can be grown with a single stem or as a clump tree. It has been resistant to the bronze birch borer. Although native in river bottoms in the southeast corner of the state, river birch grows well on upland soils. Hardy in zone 4, trial in the southern part of zone 3. It is growing well at the North Central Experiment Station at Grand Rapids.

BLACK LOCUST

(see LOCUST)

BOX ELDER

Box Elder (*Acer negundo*), 50 ft., is a fast-growing, large, spreading tree. Its compound leaves have three to five leaflets. It is native throughout most of the state and is sometimes planted in shelter belts and wind-breaks in western Minnesota. Although this tree is a maple, it is not recommended for lawn or street plantings because of its irregular form and susceptibility to breakage in wind and ice storms. It is tolerant of infertile dry sites. Female plants harbor the annoying boxelder bug. Zones 3 and 4.

BUCKEYE

Ohio Buckeye, (*Aesculus glabra*), 50 ft., is a slow-growing, round-headed tree. Flowers are creamy yellow in upright clusters and bloom in early June. Fruits

are conspicuous and slightly spiny on the surface. Usually a single, rounded, shiny brown seed is produced in each fruit. These can create a litter problem. Leaves have a good green color in summer and are golden to orange in the fall. This tree is quite free of insect problems, but leaf diseases can cause leaf discoloration and defoliation in late summer. Large trees are difficult to transplant because they grow a deep tap root. Transplanting can be avoided by planting seeds in the fall where the tree is to grow. Zones 3 and 4.

BUTTERNUT

Butternut (*Juglans cinerea*), 40 ft. A native tree as far north as Aitkin County, the butternut produces a spreading, rounded crown with large, compound leaves that are soft and hairy underneath. The edible nuts are elongated, with a deeply furrowed shell. This tree requires a rich, fertile soil. Unless butternut trees are nursery-grown or moved as seedlings, they are difficult to transplant because of a deep tap root. Hardy in zone 4; trial in the southern part of zone 3.

CATALPA

Catalpa (*Catalpa speciosa*), 40 ft. This is the largest of the catalpas and the hardiest. The leaves are very large and heart-shaped. The flowers are large and creamy white with yellowish and brown markings. They are attractive on the tree but litter the ground for a short time when they drop. Leaves fall all at one time following a killing frost. The long, narrow, fruiting pods hang on the tree all winter. Avoid dry or exposed sites. Hardy only in the southern part of zone 4. Trees grown in other areas are often disfigured by winter injury.

CHERRY

Cherries are a diverse group that should be grown in full sun on well-drained soils.

Amur Cherry (*Prunus maackii*), 30 ft. This is a small tree, native to Siberia, planted for its reddish brown, almost metallic-looking bark, which flakes off in paper strips. This tree is especially attractive in winter. Amur cherry is a close relative of our native chokecherry. Zones 3 and 4.

Black Cherry (*Prunus serotina*), 50 ft. Although native to Minnesota, this tree is not commonly planted. White flowers in long pendant clusters are followed by astringent cherries that are black at maturity. This tree produces a high quality wood used for furniture. Hardy in zone 4; trial in zone 3.



Shubert chokecherry

Canada Red Cherry (see Chokecherry).

Chokecherry, (*Prunus virginiana*), 15 ft. This can be grown as a small tree or a large shrub. It has pendant clusters of white flowers that open in late May. Fruits ripen in July and August and turn black at maturity. They are readily taken by birds or can be used for cooking or winemaking. Chokecherries are useful in shelterbelts, windbreaks, and wildlife plantings. The selection called Shubert has green leaves that turn dark maroon several weeks after they emerge. Chokecherries often produce suckers at the base of the plant. These must be removed if the plant is to be maintained as a tree rather than a shrub. Canada red chokecherry is similar to Shubert, but is reported to have a straighter trunk and a better distribution of branches to make a better formed tree. Zones 3 and 4.

European Bird Cherry (*Prunus padus*), 25 ft. This small tree resembles our native chokecherry but blooms about two weeks earlier. The cultivar *Communitata*, called the May Day tree, has large flowers and is often in bloom by May 1. This plant is very susceptible to black knot, a fungus disease causing dark enlarged swelling of the branches, marring the beauty of the tree. Zones 3 and 4.

Shubert Chokecherry (see Chokecherry).



Kentucky coffee tree

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COFFEE TREE

Kentucky Coffee Tree (*Gymnocladus dioica*), 50-65 ft., is an open, spreading tree with large, finely divided leaves. Large, broad pods add interest during the winter. Occasionally the quantity of pods can cause a litter problem. The bark is deeply furrowed and the coarse branches have few lateral twigs. It is native in southern Minnesota as far north as the Twin Cities. It is slow to leaf out in the spring; fall color is usually a golden yellow. Hardy in zone 4; trial in zone 3.

CORK TREE

Amur Cork Tree (*Phellodendron amurense*), 45 ft. This is the only cork tree that is available from Minnesota nurseries. It develops an open, spreading crown with coarse branches. The bark is deeply furrowed and corky. Foliage is dark green and free of insect and disease problems. Female trees produce clusters of green, berrylike fruits that turn black at maturity and are readily eaten by birds. Hardy in the southern part of zone 4; trial in the northern part of zone 4.

COTTONWOOD

(see POPLAR)

CRABAPPLE

(see FLOWERING CRABAPPLE)

ELM

Because of the widespread Dutch elm disease in the state, planting elms is not recommended at the present time. There are several hybrid elms that are reported to be resistant to this disease. Several are being evaluated in arboretum plantings.

American Elm (*Ulmus americana*), 60-65 ft. This species was widely planted throughout the Upper Midwest and is still our most common street tree even though many thousands have been lost. The vase-shaped form and arching branches are quite distinctive. The root system is quite shallow and often disrupts sidewalks and curbs. Hardy in all zones.

Red or Slippery Elm (*Ulmus rubra*), 60-65 ft, is a large tree that is native to river bottoms and lowlands. It is not widely planted. It is susceptible to Dutch elm disease. Hardy in zones 3 and 4.

Rock Elm (*Ulmus thomasii*), 60-65 ft. This species may be distinguished by corky ridges on the twigs. It has never been widely planted and is susceptible to Dutch elm disease. Zones 3 and 4.

Siberian Elm (*Ulmus pumila*), 40 ft. This elm is often incorrectly called Chinese elm. It is smaller than our native elm and has smaller leaves. Siberian elms grow quite fast when young. Hardiness varies with the seed source; some strains are not hardy. The Harbin strain is the hardiest. This species is more resistant than native species to Dutch elm disease but is not entirely immune. It is often planted in windbreaks and shelterbelts. Hardy strains are hardy in all zones.

FLOWERING CRABAPPLE

Flowering Crabapples (*Malus* hybrids and cultivars) are some of the most useful small trees in Minnesota. Crabapples bloom abundantly in the spring and some have an attractive display of fruit for six or more months. Different kinds vary in size from 7 to 25 feet. Foliage colors vary from a light, bright green to deep maroon to silvery red. Forms may be horizontal, columnar, rounded, or weeping. Most flowering crabapples have little or no fall color, but a few do turn a clear yellow. Fruits larger than one inch can cause a litter problem when they drop.

There are two important diseases that can infect flowering crabapple—apple scab and fireblight. Apple scab is a fungus disease that causes small sootlike spots on the leaves. If infection becomes severe, leaves yellow and drop. Trees that are susceptible to this disease sometimes lose their leaves in late July or early August. Scab does not kill the plant.

Fireblight is a bacterial disease that can cause severe injury or death to flowering crabapples. Infected branches turn black during the growing season. Diseased trees seem to be more susceptible to winter injury. Different species and cultivars vary in their susceptibility to fireblight. Chemical control is normally not practical, and so less susceptible selections should be planted.

Flowering crabapples are intolerant of poorly drained soil and are best planted on a soil of medium fertility. They should be grown in full sun. Shade will diminish the quantity of bloom and fruit.

Trees growing in grassy areas should be protected in the fall from rodent damage which may occur during fall and winter. Hardiness varies within the species and among cultivars. Most, but not all, flowering crabapples are hardy. Unless indicated otherwise, all those listed here are hardy in zones 3 and 4.

Almey Flowering Crabapple, 15 ft., has an irregular form and branching habit, with deep, rose-red flowers. It often loses its leaves in late July or August because of disease.

David Flowering Crabapple, 10-15 ft. An abundance of pure white flowers are followed by ½-inch fruits that turn bright red and remain on the tree until March or April, providing winter interest. Most winters David crabapples have been fully hardy, but winter injury has been known to occur. Trial in zones 3 and 4.

Dolgo Flowering Crabapple, 25 ft. This tree, which has light red flowers with a light colored center, is not normally considered an ornamental but is grown for the bright red, ¾-inch fruits which are used for jelly.

Flame Flowering Crabapple, 15 ft., was introduced by the University of Minnesota in 1934. It has white flowers and bright red fruits, ¾ inch in diameter. It is susceptible to scab, but usually the disease does not defoliate the tree.

Hopa Flowering Crabapple, 25 ft., has reddish flowers and red-green leaves. It is susceptible to scab, which often causes midsummer defoliation. The oblong, 1 inch fruits are bright red and are often used for jelly. Fruits drop at maturity.

Kelsey Flowering Crabapple, 20 ft., is a Canadian introduction with deep rose-red double flowers. Spring foliage is dark red, turning to red-green. It has little or no fruit.

Pink Spires Flowering Crabapple, 15 ft., has an upright form with red-tinged leaves. Flowers are light rosy-lavender. Fruits, which measure ½ inch, are deep purple-red.

Radiant Flowering Crabapple, 15 ft., was introduced by the University of Minnesota in 1958. It has a rounded shape. Rosy-red flowers are followed by fruits, ¾ inch in diameter, that turn deep red when ripe. Apple scab can cause some premature defoliation.

Red Jade Flowering Crabapple, 10-15 ft. This is a weeping white-flowered tree with attractive medium

Flame flowering crabapple



green leaves. The bright red fruits measure ½ inch and remain on the tree into the winter. Red jade is susceptible to fireblight, which can cause slight branch injury or severe dieback.

Red Silver Flowering Crabapple, 15-25 ft., has red flowers followed by ¾-inch fruits that are deep maroon in color. Foliage is purple-red.

Red Splendor Flowering Crabapple, 25 ft. Somewhat vase-shaped when young, this tree spreads out with age. Flowers are light rose-red. Fruits, ½ inch in diameter, are showy from late July until March or April, but may be taken by birds. Seedlings of red splendor are being sold for windbreak and shelterbelt plantings, but if they are called red splendor, they are misnamed. To be called red splendor, the plants must be grafted, not seedlings. Seedlings will vary in flower color, fruit size, and in length of time that the fruits persist.

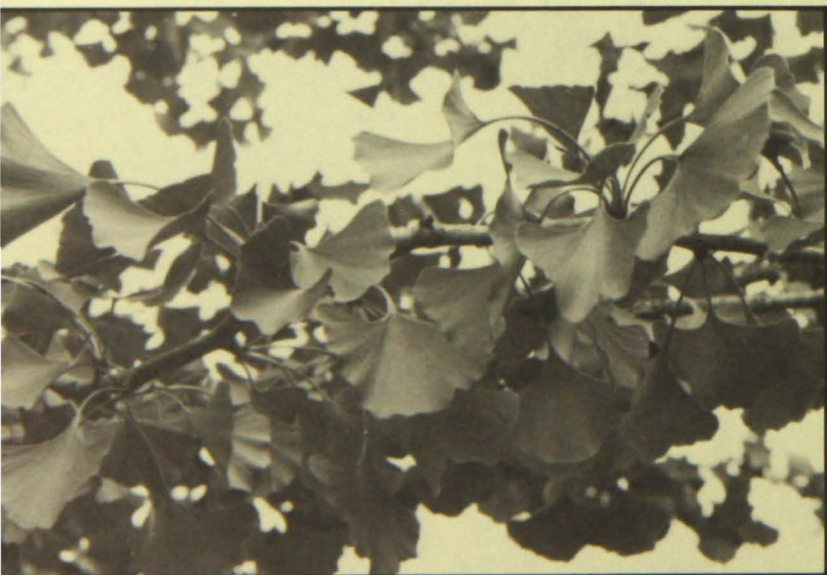
Royalty Flowering Crabapple, 20 ft., has deep crimson flowers, with deep red leaves that provide little contrast with the flowers. Leaves remain attractive through the entire season. If this selection becomes infected with fireblight, injury can be severe.

Snowdrift Flowering Crabapple, 20-25 ft. This tree has pink buds that are white when open. Foliage is a medium green. The abundant ½-inch fruits are red. This tree has a broad oval form. Some plants have shown some fireblight injury while others have not been infected.

Sparkler Flowering Crabapple, 15 ft. Introduced by the University of Minnesota in 1969, this tree starts blooming at a very young age and blooms heavily each year thereafter. Only a few ½-inch dark fruits are produced, but they persist into the winter. This tree has a broad, horizontal form.

Spring Snow Flowering Crab, 20-25 ft. This is an upright tree with white flowers, but usually without fruit. Most years it has been free of fireblight, although one year some plants at the arboretum were apparently damaged by this disease.

Ginkgo foliage



GINKGO

Ginkgo (*Ginkgo biloba*), 50 ft. The ginkgo is a tree of prehistoric origin that has an interesting fan-shaped leaf with parallel veins. During the summer the leaves are green. During a mild, long fall leaves will turn yellow; otherwise they often freeze on the tree and drop all at once. Leaves are usually not injured by insects, disease, or air pollution. Since female trees produce fruits that are ill-smelling when they decay, trees sold by nurseries often are grafted male trees. Seedling ginkgoes are not winter hardy in Minnesota. Once trees reach a height of 3-4 feet they survive the winters in the southern part of zone 4 without injury. For that reason it is advisable to plant one that is at least 4-5 feet tall.

Ginkgoes transplanted with a ball of soil seem to become established more quickly than those moved bare root. Trees planted bare root grow very slowly for two to three years. The growth rate of established trees in the arboretum has been about one foot annually.

HACKBERRY

Hackberry (*Celtis occidentalis*), 50-60 ft. This tree has a form similar to that of elm. It will grow on many sites but grows fastest on fertile, moist soils. The deep root system makes hackberry quite drought tolerant. It often takes two years to reestablish itself after transplanting. Several problems are common to this tree. One is an insect gall that causes a wartlike growth on the leaves. However, these do not significantly affect tree growth. Clusters of twiggy outgrowths on some branches, called "witches broom," are common on hackberry, but cause no apparent damage.

Hackberry has small green berries that turn purplish at maturity. The medium-green summer foliage may turn yellow in the fall if severe weather is delayed. The bark is rough with prominent, short, corky ridges. This is a useful tree for shade, windbreaks, shelterbelts, and street plantings. Adapted to zone 4; trial in zone 3.

HAWTHORN

Hawthorns or thornapples are small trees commonly used for landscape planting. Minnesota has many native species and numerous natural hybrids. Identification is often difficult. Most of the native plants, as well as those brought in from other areas, are susceptible to cedar-hawthorn rust, which causes yellow spotting of the foliage. Some hawthorns become so badly infected that their leaves are more



Honey locust

English Hawthorn (*Crataegus laevigata*), 15 ft., has lacked hardiness and has frequently has tip dieback due to winter injury. Branch dieback has occurred several winters on plants in the arboretum. Zone 4. **PAUL'S SCARLET HAWTHORNE** (*Crataegus laevigata* 'Paul's Scarlet'), 15 ft., (see English Hawthorn).

Toba Hawthorn (*Crataegus x mordensis* 'Toba'), 10-16 ft. This hawthorn is susceptible to hawthorn-cedar rust, which discolors the leaves but does not cause defoliation. The long-lasting double flowers open white and turn pink as they age. The bright red ½-inch fruits drop in September. For unexplained reasons the trunk is somewhat twisted. This tree is somewhat short-lived and may last only 10 to 15 years. Hardy in Zone 4; trial in zone 3.

Washington Hawthorn (*Crataegus phaenopyrum*), 30 ft., has lacked hardiness in arboretum trials. Zone 4.

yellow than green. Severe infection may cause browning of the foliage and premature defoliation.

Hawthorns are trees that are adapted to well-drained soils and full sunlight. Most produce an abundance of long, sharp thorns, but selections without thorns can be planted where thorns might cause problems. Most trees produce white flowers that have an unpleasant fragrance. Most produce fruit that are ½ inch in diameter and which turn red at maturity. Some drop their fruit in late summer while others retain their fruit until spring.

Hawthorns are most commonly found in the southern half of the state, but some are native in northern areas. Other species and selections of hawthorns vary in hardiness and may not be adapted to Minnesota conditions.

Many native hawthorn trees have a horizontal growth habit, with an almost Oriental appearance. Despite the rust problem of the native hawthorns, they are an asset to the landscape.

Cockspur Hawthorn (*Crataegus crus-galli*), 10-15 ft. This tree has glossy, bright green leaves that are nearly resistant to cedar-hawthorn rust. Trees produce white flowers followed by fruits that are dark red at maturity. The fruits are retained on the trees until spring unless taken by birds. Flowering sometimes does not occur until several years after planting. Trees have a horizontal habit. Thorns are about two inches long. A thornless form of this hawthorn is available at nurseries. Adapted to zone 4 and the southern half of zone 3; trial in the northern half of zone 3.

THORNLESS COCKSPUR HAWTHORN (*Crataegus crus-galli inermis*), 10-15 ft., is similar to cockspur hawthorn, but without thorns. Hardiness zones are the same as for cockspur hawthorn.

HICKORY

Hickories are not commonly planted because their deep tap roots make transplanting difficult. All do best in rich, fertile, moist soil with good drainage. Seed should be planted in the fall where the trees are to grow, eliminating the need to transplant, or they can be stored over the winter in moist sand or peat and planted in the spring.

Bitternut Hickory (*Carya cordiformis*), 40-50 ft. This tree is native as far north as Mille Lacs Lake. It has a nonedible nut and a smooth, gray bark. Adapted to zone 4; trial in zone 3.

Shagbark Hickory (*Carya ovata*), 50-80 ft. Native in southeastern Minnesota, this tree has a bark that becomes shaggy with age, separating in long narrow strips. The nut has a delicate flavor, but it is difficult to crack. Hardy in the southern part of zone 4.

HONEY LOCUST

Honey locusts (*Gleditsia triacanthos inermis* and cultivars) are fast-growing members of the pea family. They are tolerant of dry sites. They leaf out late in the spring. The foliage allows some light to penetrate the crown, making it possible to grow a lawn beneath the tree, yet it is dense enough to provide a pleasant shade. Leaflets are tiny and so, when they drop in the fall, little raking is required.

Honey locusts sold in nurseries are usually grafted thornless selections that do not produce seed pods, although occasionally they will produce a few pods. Seedlings can produce an abundance of long, flat seed pods, which creates a litter problem. Flowers are inconspicuous and green. Seedling honey locusts sometimes have branch thorns that are 6 inches or more in length.

Some honey locusts have an arching main trunk, which may not be objectionable in some landscapes. But if a large shade tree is needed, select a honey locust with a strong upright central trunk or be prepared to do some corrective pruning. Prune during periods of low humidity during the growing season.

Recently, some honey locusts in Minnesota have become infected by a fungus disease that can badly disfigure or kill these trees. Infection often occurs at the base of branches and encircles the trunk. Presently there is no chemical control. Pruning during dry periods helps minimize the chance of spreading the disease.

Honey locusts are intolerant of wet soils, and should receive full or nearly full sunlight. They are best adapted to the southern parts of zone 4 northward to the Twin Cities. When planted further north, many die back to the ground because of winter injury. There are scattered honey locusts in the northern areas of the state to Moorhead, and near Lake Superior in Duluth.

Thornless Honey Locust (*Gleditsia triacanthos inermis*), 50-60 ft., is reproduced from seed rather than from grafts, and so some trees will produce numerous seed pods. Size and shape of each will vary.

IMPERIAL HONEY LOCUST (*Gleditsia triacanthos inermis* 'Imperial'), 30-40 ft. This selection is more spreading than upright and often lacks a single central trunk. Foliage is dark green. Because the leaflet spacing is closer than most and branches are more closely spaced, this selection is denser than most honey locusts.

MAJESTIC HONEY LOCUST (*Gleditsia triacanthos inermis* 'Majestic'), 40-50 ft., is nearly as broad as it is tall.

RUBY LACE HONEY LOCUST (*Gleditsia triacanthos inermis* 'Ruby Lace'), 15 ft., is not as commonly available as in past years. It is often injured during the winter in the Twin Cities area, sometimes killed to the base. The maroon spring foliage is attractive, but turns an unattractive brown in the summer. It usually has poor tree form.

SHADEMASTER HONEY LOCUST (*Gleditsia triacanthos inermis* 'Shademaster'), 50-60 ft., is a selection that has a strong central trunk and ascending branches.

SKYLINE HONEY LOCUST (*Gleditsia triacanthos inermis* 'Skyline'), 50-60 ft. This selection develops a stronger trunk than many, giving the tree a slightly pyramidal form.

SUNBURST HONEY LOCUST (*Gleditsia triacanthos inermis* 'Sunburst'), 30-40 ft. New growth is a bright yellow, and so in the spring the entire tree is yellow. As the foliage ages it turns green, but the tips of the growing branches are yellow. This selection is very fast-growing, but occasionally the wind causes some branch breakage. It is slightly less hardy than the other honey locusts, with occasional winter injury occurring in the Twin Cities area.



Ironwood

HOP HORNBEAM

(see IRONWOOD)

HORSE CHESTNUT

Horse Chestnut (*Aesculus hippocastanum*), 40-50 ft. The horse chestnut is often confused with the Ohio buckeye, but the buckeye is much hardier and therefore more common. The winter buds of the horse chestnut are large and sticky, whereas the buckeye's are small, dark brown, and dry. Horse chestnut has a long tap root making it difficult to transplant in larger sizes. Large upright clusters of cream-colored flowers appear in June and are followed by large nonedible nuts. The foliage often becomes blemished with various leaf spot diseases and marginal drying. This tree can provide dense shade. It is suggested for trial in protected locations in the southern half of zone 4.

IRONWOOD

Ironwood or Hop Hornbeam (*Ostrya virginiana*), 25-40 ft. This is a common native, occurring over much of the state, often growing beneath other trees. Although shade tolerant, the ironwood will grow better in full sun. It is quite free of insect and disease problems and will tolerate a wide range of soils, except poorly drained soils. It can be grown as a clump or as a



American linden

single-trunk tree. Fall color is yellow to brown. Some leaves persist into winter, providing winter interest. Seeds are born in interesting hoplike pods at the tips of branches. Zones 3 and 4.

JAPANESE TREE LILAC

Tree Lilac (*Syringa reticulata*), 20-25 ft. Has a dark cherrylike bark. The tree has an interesting irregular form, but it can be pruned to have a straighter trunk. Tree lilacs can be grown as clump trees. Tree lilacs bear large clusters of cream-colored flowers in late June. To some the flowers are fragrant, but to others they have an odor that is unpleasant at close range but that is not objectionable in the landscape. Tree lilacs tend to bloom heavily every other year. Brown seed clusters, irregular growth habit, and texture and color of bark add winter interest. Zones 3 and 4.

KENTUCKY COFFEE TREE

(see COFFEE TREE)



Greenspire linden



LINDEN OR BASSWOOD

The American basswood is native to Minnesota and is available from nurseries, but the European linden is sold more often. These trees do best on a rich moist soil, but tolerate a wide range of soils. Although tolerant of shade, they grow better in full sunlight. Trees grown in forests tend to be somewhat narrow and leggy, but when grown in the open, they develop full, rounded crowns. They are quite free of insect and disease problems.

American Linden or Basswood (*Tilia americana*), 50-80 ft., has small clusters of fragrant cream-colored flowers in late June. Fall color is yellow to brown. American linden makes a good single-trunk tree as well as a clump tree. Some plants tend to produce many watersprouts at the base of the trunk, which can be removed by pruning. This native species is adapted to both zones 3 and 4.

Greenspire Linden (See Little Leaf Linden).

Little Leaf Linden (*Tilia cordata*), 50 ft., is similar to the American linden, but it has smaller leaves and finer branches. It is also slower-growing. Little leaf linden tend to be somewhat pyramidal in form. Adapted to southern parts of zone 4. In the Twin Cities area, trees that are fertilized and watered late in the summer can be subject to winter injury.

GREENSPIRE LINDEN (*Tilia cordata* 'Greenspire'), 50 ft. This is a selection of little leaf linden with a strong central trunk, which gives the tree a broad pyramidal form. Adapted to the southern part of zone 4.

Redmond Linden (*Tilia x euchlora* 'Redmond'), 40-50 ft. The leaves of this linden are larger and darker green than those of little leaf linden. The tree is dense with a pyramidal form. It apparently reestablishes itself more quickly after transplanting if moved with a ball of soil rather than if moved bare root. Adapted to the southern part of zone 4.

LOCUST

This common name is used for both honey locust and black locust trees, both members of the legume family. Black locust has showy flowers, whereas the honey locust has inconspicuous ones. Black locusts have pairs of short thorns, whereas honey locusts either are thornless or have long thorns that are sometimes branched. For information on honey locusts, see the description under Honey Locust.

Black Locust (*Robinia pseudoacacia*), 50 ft. In early June this tree produces long clusters of large pealike flowers that are fragrant and cream-colored. Black locust is fast-growing and will tolerate drought. Although there are some large black locusts in the southern half of the state, most have never become large because of injury caused by the locust borer. The borers weaken the trunk, and the trees are blown over. The root system often produces suckers that come up in many areas of the lawn and become a nuisance. Zones 3 and 4.

GLOBE LOCUST (*Robinia pseudoacacia* 'Globosa'), 10-15 ft., is a dense-growing selection grafted on a standard trunk, providing a globe of dark green foliage on a straight trunk. It is subject to borers that attack the common black locust. Zones 3 and 4.

MAGNOLIA

Magnolias are commonly used in areas with milder climates. Unfortunately, most are not hardy enough in Minnesota and few are available in local nurseries. Even though some are able to survive Minnesota winters, their flower buds are killed during the winter. They will grow best on fertile, moist soil with good drainage in a protected location. Magnolias should be moved with a ball of soil when they are transplanted.

Cucumber Tree Magnolia (*Magnolia acuminata*), 40 ft., is an upright round-topped tree. Large, inconspicuous greenish yellow flowers appear in late May or early June. This species is one of the hardiest of the magnolias. Hardy in the southern part of zone 4 and on protected sites in the northern part of zone 4.

Merrill Magnolia (*Magnolia loebneri* 'Merrill'), 15 ft. This small tree has large white flowers with 8 to 15 petals that open in early May. Fruits are cucumberlike pods that expose red seeds when they are mature. Foliage is dark green. Trial in zone 4.

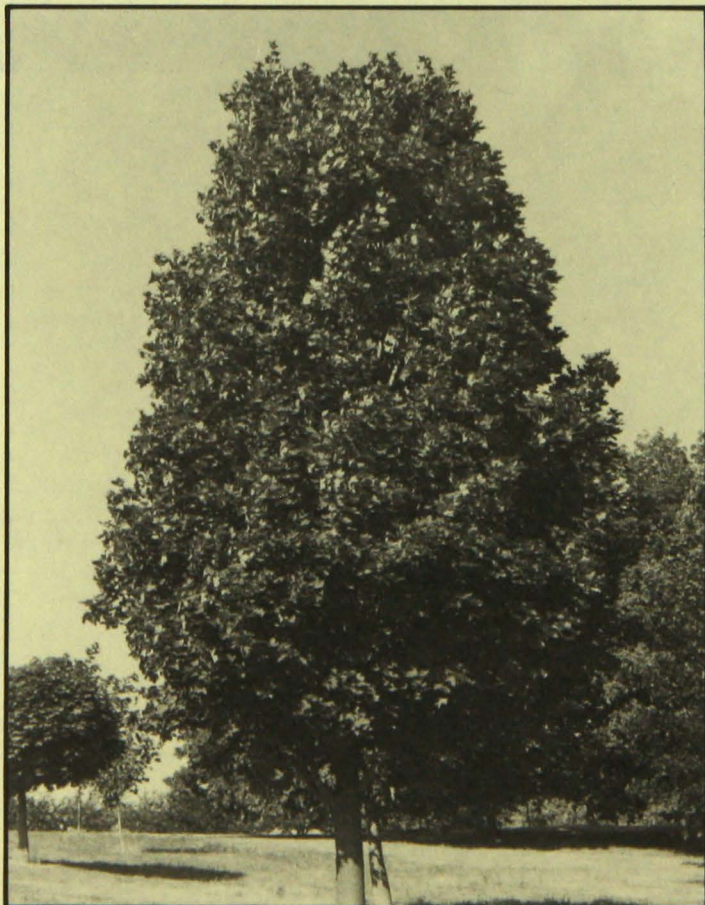
Saucer Magnolia (*Magnolia x soulangiana*), 15 ft. The large flowers on this tree range in color from white to maroon. Flower bud injury to this magnolia is severe and dieback of the plant is common on exposed sites. It is not dependably hardy for Minnesota except for protected in-town sites in the southern part of zone 4. Some saucer magnolias in the Twin Cities area bloom regularly.

Star Magnolia (*Magnolia stellata*), 10-16 ft., is often more shrublike than treelike in Minnesota. It is probably the hardiest of the magnolias with showy flowers. Occasionally some of the flower buds are injured, but there are normally enough left to make a good show of white blossoms. In the Twin Cities area the tree normally blooms during the first week of May. Trial in zone 4.

Umbrella Magnolia (*Magnolia tripetala*), 20-25 ft., has large leaves and flowers. This magnolia does not bloom until the tree is in leaf, so the white flowers, though large, are inconspicuous when they open in June. Plant in an area with wind protection. Trial in zone 4.

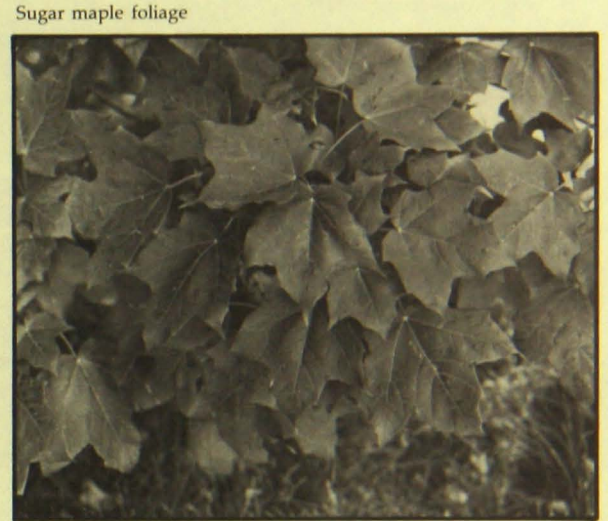
MAPLE

Cleveland Norway maple





Silver maple foliage



Sugar maple foliage

Maples are common in both native and planted landscapes in Minnesota. They are a diverse group, ranging in size from shrubs to large trees. Different kinds occur on different sites, and some have quite specific site requirements. All are tolerant of some shade, but most will grow better in full sunlight. Maples are one of the most colorful groups of trees, with fall color dependent on the species, the cultivar, or possibly the site.

Some maples, such as box elder and silver maple, are prolific seed bearers and the seedlings can be a nuisance. The growth rate of maples following transplanting ranges from slow to fast, depending on the species. Most young maples are susceptible to late winter sunscald injury on the trunk. To protect them from the sun, the trunks of young maples should be wrapped each fall until their bark becomes thick and corky.

Amur Maple (*Acer ginnala*), 20-25 ft. Most often grown as a shrub, the Amur maple makes a desirable small tree if pruned to tree form. It grows fast and can tolerate most soil conditions except wet sites. Fall color varies from plant to plant but is usually very good, often in shades of red, with some trees turning yellow or orange. Amur maple is tolerant of partial shade. Zones 3 and 4.

Norway Maple (*Acer platanoides*), 50 ft., is a spreading tree that provides dense shade. It grows best on fertile soil. Norway maples normally do not change color in the fall unless the season is long, in which case some will turn a clear yellow. This species and its cultivars are very sensitive to sunscald, and young trees must be wrapped in the fall to prevent sunscald injury to the trunk. They are adapted to southern parts of zone 4 north to the Twin Cities area, although on rare occasions winter injury occurs in the northern part of the zone.

CLEVELAND NORWAY MAPLE (*Acer platanoides* 'Cleveland') is a fast-growing dense selection with an oval form.

COLUMNAR NORWAY MAPLE (*Acer platanoides* 'Columnare') is a narrow, upright tree.

CRIMSON KING NORWAY MAPLE (*Acer platanoides* 'Crimson King') has maroon-red foliage through the growing season. It is sometimes difficult to establish after transplanting, especially on windy sites.

EMERALD QUEEN NORWAY MAPLE (*Acer platanoides* 'Emerald Queen') has dark green, leathery foliage.

GLOBE NORWAY MAPLE (*Acer platanoides* 'Globosum') is a globe-shaped tree.

JADE GLEN NORWAY MAPLE (*Acer platanoides* 'Jade Glen') is one of the fastest growing Norway maples with a good straight trunk.

ROYAL RED NORWAY MAPLE (*Acer platanoides* 'Royal Red') is reported to be an improvement over Crimson King, easier to transplant and with a brighter color.

SCHWEDLER NORWAY MAPLE (*Acer platanoides* 'Schwedleri') is a broad tree that has reddish bronze foliage in the spring, which turns a dark green as the leaves mature.

VARIEGATED NORWAY MAPLE or **HARLEQUIN NORWAY MAPLE** (*Acer platanoides* 'Variegatum') has leaves with white variegation. This tree needs protection from wind. Sections of the tree that produce green leaves should be removed. Harlequin maple grows very slowly and is more of a novelty tree than a shade tree.

Red Maple (*Acer rubrum*), 50 ft., is a symmetrical tree native to the slightly acid soils of northeastern Minnesota southward to the central part of the state. This species has small red flowers in mid-April. Fall foliage is usually red, but can also be yellow or orange. Since this maple is native as far south as Florida, only northern strains started from northern seed sources should be planted. A number of cultivars have been introduced but most of these were selected in the East and have not always colored well in this area. Selections made on the West Coast have not been hardy here. Red maples will not grow on alkaline soils.

Northern strains are adapted to zones 3 and 4 where soil conditions are suitable.

Silver Maple (*Acer saccharinum*), 80 ft., is a very large, fast-growing species that is widely planted for shade and wind protection. This species is not recommended for small yards or areas close to buildings because of its size and its brittle wood that breaks in ice and windstorms. Some trees produce a heavy crop of seed that can create litter problems. Seedlings can become a nuisance. Silver maple has a shallow, competitive root system. This tree is sometimes used temporarily in shelterbelts or windbreaks until other species reach a suitable size. Several cut-leaf selections are sometimes planted. Beebe and Weiri are selections that have finely cut leaves. Hardy in all zones.

Sugar Maple (*Acer saccharum*), 60 ft., is a large, round-headed native tree found in rich, moist soil throughout the wooded portions of the state where broadleaf trees occur. This is one of the most handsome maples, with bright green leaves that turn yellow to orange or scarlet in the fall. It is widely planted for ornamental and street plantings. Sugar maples require a moist, rich, deep soil. Sunscald can be a problem on young trees. It grows slowly when first transplanted, growing at a moderate rate after it is established. The dense crown and relatively shallow roots can create some problems in lawn and garden areas. There are cultivars with distinct forms but they are not commonly for sale in Minnesota. Zones 3 and 4.

Tatarian Maple (*Acer tatarica*), 20 ft., is similar to Amur maple and apparently hybridizes with it. Like the Amur maple, it can be grown either as a small tree or a large shrub. Leaves are not as prominently lobed as on the Amur maple. Tatarian maples require an acid soil and are tolerant of infertile soil and partial shade. Autumn color is usually yellow. Zones 3 and 4.

MOUNTAIN ASH

Mountain ash is fast-growing, but can be short-lived for several reasons. Sunscald on the trunk during the winter often can cause severe crippling. The trunks of young trees should be wrapped in the fall of each year to prevent such injury. Rings of small holes made by sapsuckers can do severe damage. Within the past decade fireblight, a bacterial disease, has damaged and killed many mountain ash trees in Minnesota. Apparently all species and cultivars are susceptible to this disease. Despite these problems many people are fond of this fast-growing, colorful tree.

In June, mountain ash trees have clusters of cream-colored flowers. In late summer most mountain ashes have pendant clusters of orange to scarlet fruits. These provide bird food from fall into the winter.

American Mountain Ash (*Sorbus americana*), 20 ft., is native to the cool, moist woods of northern Minne-

sota. It can be grown as a multistemmed shrub or as a small tree. Small, white flowers appear in dense, flat-topped clusters in June. Bright red, berrylike fruits, about 2 inches in diameter, form in late summer and fall. Birds, especially robins, are fond of the fruits and usually strip the tree of fruits in the fall. Zones 3 and 4.

European Mountain Ash (*Sorbus aucuparia*), 30 ft. This is the most commonly planted mountain ash. The flowers and fruits are larger than those of the American mountain ash and the orange fruits stay on the tree well into winter. Apparently freezing and thawing are required to soften the fruits to make them palatable to birds. Zones 3 and 4.

Korean Mountain Ash (*Sorbus alnifolia*), 30 ft., has a dense crown. Unlike most species of mountain ash, it has simple leaves that resemble those of alder. The bark is quite smooth and gray, with prominent white, diamond-shaped markings. Showy white flowers are produced in flat-topped clusters in late May or early June. The small fruits are orange to red and showy in late fall. This species is new to the nursery trade in Minnesota. Hardy in zone 4; trial in the southern part of zone 3.

Showy Mountain Ash (*Sorbus decora*), 30 ft. This species is native to the north shore of Lake Superior. It is similar to the American mountain ash except that the tree and the fruits are larger. The fruits are usually eaten by birds as fast as they ripen. Zones 3 and 4.

MULBERRY

Mulberries are uncommon trees in Minnesota. If one is present, there are likely to be others nearby that grew from seed scattered by birds.

Red Mulberry (*Morus rubra*), 30 ft., is reported to be native in Minnesota but it is rare. Trial in the southern part of zone 4.

Tatarian Mulberry (*Morus alba* 'Tatarica'), 20 ft., is often a spreading tree with many dead twigs due to winter injury. The trunk is a yellowish brown. The abundant fruits have a purplish color. This tree is easily identified by its irregularly lobed leaves. Trial in the southern part of zone 4.

OAK

Oaks are prominent trees in many natural Minnesota landscapes. Very few oaks are planted because of difficulties in transplanting. Most species have long tap roots, often longer than the height of the seedling tree. Because of this problem, few oaks are sold by Minnesota nurseries at the present time.

Since oak seedlings are fast-growing, they can be started from seed that is planted where the trees are to grow. The acorns should be either planted in the fall or stored during the winter in moist sand in a cool place

for planting in the spring. Keeping down competition from weeds will assist survival of the seedlings and increase the growth rate.

Oak wilt, a fungus disease, can kill mature oak trees. Red oaks (with sharp, pointed leaf lobes) are more susceptible than white oaks (with rounded lobes). Oak wilt often enters trees through wounds caused by pruning or by root damage occurring during construction. Once the disease is in a tree it can be spread from tree to tree by root grafts. Wide spacing in landscape plantings should prevent the spread of oak wilt be root grafts. Pruning of oaks should be limited to the dormant season between November and February. The roots of oak trees are very sensitive to changes in soil level. The addition of fill should be avoided because even a small change in soil level can kill the roots. Often such trees die slowly over a period of several years.

Bur oak (*Quercus macrocarpa*), 30-65 ft. is a picturesque, burly, native tree that will tolerate poor sites. Because of insect problems and the lack of fall color, this species is not often planted. Zones 3 and 4.

Pin Oak (*Quercus palustris*), 40-60 ft., is sometimes confused with a species common to northern Minnesota, the northern pin oak (*Quercus ellipsoidalis*). The pin oak has a well-defined central trunk, and the tree has a pyramidal form similar to that of a spruce. Planting on acid soil will avoid iron chlorosis problems. These problems usually occur after 10 to 15 years on pin oaks that are planted on alkaline soils. Fall color is a bright red. Hardy in the southern half of zone 4.

Red Oak (*Quercus rubra*), 65-80 ft., is a majestic oak with dark green leaves that turn red in the fall. This is one native species that is offered for sale by some Minnesota nurseries. Zones 3 and 4.

Swamp White Oak (*Quercus bicolor*), 35-65 ft., is a native oak occasionally found in southern Minnesota north to the Twin Cities area. It has a compact root system that lends itself to transplanting. Glossy dark green leaves turn brown in the fall. Zone 4.

White Oak (*Quercus alba*), 50-65 ft., has a rounded top. It grows best in a fertile, heavy soil. The leaves are green with a whitish underside; they turn red to red-maroon in fall. Some brown leaves persist on the tree into winter. Zone 4 and the southern half of zone 3.

OHIO BUCKEYE

(see BUCKEYE)

PLUM

Wild Plum (*Prunus americana*), 20 ft., is a native tree that forms thickets throughout the state. White flowers, produced in early May, are showy and fragrant. Fruits are used for jellies and preserves. This species is often planted in windbreaks, shelterbelts,

and wildlife plantings. Wild plum roots provide the stock for grafting most of Minnesota's cultivated plums. Suckers are often produced. Unless suckers are removed, a thicket of wild plums will develop. Zones 3 and 4.

POPLAR

Poplars are common in both planted and native landscapes. Some are often planted because of their rapid rate of growth and their adaptability to a wide range of growing conditions.

Some species grow several feet a year but they usually have many problems. A major difficulty is that they are often short-lived because of fungus cankers on the trunk. Many have a shallow, competitive root system that makes it difficult to garden or grow a lawn near them. Some produce seeds in cottonlike masses that are a nuisance. Some species have wood that becomes brittle with age. A few have roots that produce unwanted suckers that come up in lawns or gardens.

Poplars have flattened leaf stems that cause the leaves to rustle in the slightest breeze. Many turn a clear yellow in the fall.

Bolleana Poplar (see White Poplar).

Cottonwood (*Populus deltoides*), 100 ft., is the largest tree that can be grown in Minnesota. Some cottonwoods have trunks that can be 3 feet in diameter. Because of their immense size they are too big for many landscape plantings. The cottonwood is native along stream banks and in deciduous woods and has been widely planted in western Minnesota shelterbelts. Leaves are triangular, turning a golden yellow in the fall. The 'cotton' from female trees is objectionable when trees are planted near residences. This problem can be avoided by planting male trees. Siouland is a male selection that is resistant to rust, a disease common to the species, but it is susceptible to canker. Zones 3 and 4.

Japanese Poplar (*Populus maximowiczii*), 40 ft., has attractive light green bark. In the arboretum it has been fully hardy and shows promise where a fast-growing tree is desired. This species has had some canker. Hardy in zone 4; trial in zone 3.

Lombardy Poplar (*Populus nigra 'Italica'*), 40 ft., is a tall, upright tree with dark bark and dark, shiny green leaves. These trees are fast-growing but often die within several years or become unsightly because of partial dieback. They are often planted for a screen. Hardy in zone 4; trial in the southern part of zone 3.

Robusta Poplar (*Populus x robusta*), 40-70 ft., is a fast-growing hybrid poplar that is seedless. It has a broad oval form. It is often used in shelterbelts as a temporary tree until evergreens reach an effective size. They quite often die from canker disease before they reach 15 to 20 years of age. Zones 3 and 4.

Trembling Aspen (*Populus tremuloides*), 40 ft., is a native tree of interest because of its greenish white bark and its quivering leaves. Suckers come up around the tree so it is best to plant this species where a naturalistic, wooded setting is desired. Leaves turn a clear yellow in the fall. Hardy in all zones.

White Poplar (*Populus alba*), 40 ft., is a large, broad tree with grayish white bark. Leaves are covered with silvery-white hair on the underside. They are lobed like those of maples and the tree is often incorrectly called "silver maple." This tree has a shallow root system that often sends up suckers that are a nuisance. Zones 3 and 4.

BOLLEANA POPLAR (*Populus alba* 'Bolleana'), 40 ft., is an upright selection of white poplar that is short-lived because of fungus cankers, but survives longer than the Lombardy poplar. Zones 3 and 4.

REDBUD

Eastern Redbud (*Cercis canadensis*), 15 ft., is a spreading tree native to areas of the United States south and east of Minnesota. Leaves are large and heart-shaped, turning yellow in the fall. Flowers are rosy pink, opening before the leaves appear. Redbud is variable in hardiness, depending on the strain. Although there are a few large specimens in the Twin Cities and southward, the future for this species in Minnesota depends on the development of hardy selections. At present it is recommended for trial only in protected locations in the southern part of zone 4.

RUSSIAN OLIVE

Russian Olive (*Elaeagnus angustifolia*), 25 ft., is a large shrub or small tree with narrow, silvery-green leaves. It is not an olive, but has an olivelike appearance. Flowers are small, yellow, and very fragrant in mid-June. The silvery fruits are small and plumlike. Russian olive is hardy, drought resistant, and alkali tolerant, but is intolerant of poorly drained soils. It is often planted as a lawn specimen or in background plantings, windbreaks, and shelterbelts. The silvery foliage offers a pleasing contrast with other foliage. Zones 3 and 4.

THORNAPPLE

(see Hawthorn)



Russian olive



Black walnuts

WALNUT

Black Walnut (*Juglans nigra*), 60 ft., is a large tree with wide-spreading branches. It has dark green, compound leaves and edible nuts that are oval, dark brown, and irregularly grooved. Black walnuts are native in southeastern Minnesota and are commonly planted in shelterbelts and as shade trees on large lawns. The dark lumber is used for quality furniture.

Walnut leaves and roots contain a growth inhibitor that adversely affects tomatoes, potatoes, eggplants, and peppers; therefore, walnuts should not be planted near vegetable gardens. This tree grows best on fertile, moist sites. Because walnuts have long tap roots, usually only smaller sizes are transplanted. They are best adapted to the southeastern and southern parts of zone 4, but are grown to a limited extent in other parts of this zone. A few are growing in the southern part of zone 3 where soils are favorable.

WILLOW

Willows are common native trees and shrubs. Several species are used in landscape plantings. This group is adapted to a wide range in soil moisture and fertility. Willows become established shortly after transplanting and grow rapidly. The wood of willow trees is brittle, making them susceptible to wind damage.

Corkscrew Willow (*Salix matsudana* 'Tortuosa'), 20-25 ft., is a novelty tree because of the spiral twisting of its branches. Often older trees are killed by the winter or parts of the tree will winterkill. Younger plants appear to be less susceptible to winter injury. For this reason it is a good practice to start new plants periodically. This tree roots easily from cuttings. Flower arrangers find the branches useful. For protected sites in the southern part of zone 4.

Laurel-leaved Willow (*Salix pentandra*), 30-40 ft. This is grown as a large shrub or a small tree. The finely toothed leaves are a glossy, dark green. This tree grows especially well on moist sites. Zone 4.

Weeping Willow (*Salix alba tristis*), 50 ft., is the willow most often used for landscape planting. The golden branches hang down and often touch the ground. Branches are very brittle and are often broken by the wind, making cleanup of the litter an ongoing task. If planted away from intensively maintained landscaped areas, they can still be attractive and the litter will be out of sight. This form of the weeping willow is distinguished from weeping willows of other species by its bright yellow twig color. Hardy in the southern part of zone 3 and 4, although some winter injury can occur in both zones.

White Willow (*Salix alba*), 50-65 ft. This tree is often used in shelterbelt plantings. The variety of this species, *chermesina*, has twigs that are red during the winter. It is often grown as a shrub cut to the ground each year, since the red color is most pronounced on young stems. Zones 3 and 4.

Shrubs

ALPINE CURRANT

(see CURRANT)

AMUR MAPLE

Amur Maple (*Acer ginnala*), 10-15 ft., is a fast-growing versatile shrub. It is tolerant of infertile soils, dry sites, and partial shade, but intolerant of poorly drained soils. Fall color is intense, usually in shades of red, but also yellow and orange. This plant is useful for shrub borders, formal and informal hedges, specimen plants, small trees, shelterbelts, and windbreaks. Zones 3 and 4.

ARROWWOOD

Arrowwood (*Viburnum dentatum*), 7-10 ft., is a shrub that is tolerant of some shade and can tolerate a wide range in soil moisture. It has white clusters of flowers followed by fruits in pendant clusters that turn deep blue at maturity. During the summer the foliage is a clean, dark green; it turns a purple-red in the fall. Zones 3 and 4.

AZALEA

(see also RHODODENDRON)

Azaleas are new to Minnesota and have considerable potential for use in Minnesota landscapes. They require an acid soil that retains moisture yet is adequately drained. Nonacidic soils can be modified by mixing in acid peat moss or by replacing the soil prior to planting. Azaleas do best in full sunlight, but benefit from some shade during the hottest part of the day. Plants seem to benefit from a generous organic mulch. Azaleas and rhododendrons should be moved with soil attached to the roots, either potted or as balled and burlapped plants.

Exbury Hybrid Azaleas (*Rhododendron*, Exbury hybrids), 4-8 ft. There are many named selections in this group, with a wide range of colors available. The hardiest selections at the arboretum bloom at best only two or three years out of five. Enclosing the plants with chicken wire and filling the space with loose leaves such as oak protects the flower buds and makes it possible for them to bloom. Zone 4.

Korean barberry



Northern Lights Azalea (*Rhododendron* 'Northern Lights'), 7-10 ft. These hybrid azaleas developed by the University of Minnesota Landscape Arboretum have flower buds that withstand winter temperatures throughout the state. There is a slight variation in color, plant size, and growth among Northern Lights azaleas. The fragrant flowers range in color from light to bright pink. Bloom lasts 7 to 14 days depending on the weather. Hardy in zones 3 and 4 without protection.

Mollis Azalea (*Rhododendron* x *kosterianum*), 5-7 ft. Plants sold by local nurseries are grown from seed of a strain that is hardier than most strains of the mollis azalea. The color varies slightly, but most are in shades of orange. Flower buds of the Minnesota strain of the mollis azalea suffer injury at temperatures of -15° to -20° F. To some people the flowers have a musty odor. Plants are vigorous and have somewhat coarse foliage. Adapted to the southern half of zone 4.

BARBERRY

Barberries belong to a large genus, with only a few species that are hardy in Minnesota. None of the evergreen types is hardy. Many are barred from importation into this country because they are alternate hosts for the stem rusts of small grains.

Barberries are adapted to a wide range of soils. Most have a good fall color. In Minnesota most are subject to slight tip kill or more severe winter injury. Their sharp spines make pruning somewhat difficult.

Japanese Barberry (*Berberis thunbergii*), 3-4 ft. This species is usually hardier than most of the clones of the Japanese barberries, although its tips can be killed during the winter. During the summer the foliage is dark green, but often takes on a showy, bright red fall color. It has many elongated, bright red fruits, $\frac{1}{2}$ inch in length, that are retained into the winter. Adapted to zone 4; trial in zone 3.

CRIMSON PYGMY BARBERRY (*Berberis thunbergii* 'Crimson Pygmy'), 1 ft., has a spread up to 3 feet. In Minnesota it will often suffer winter tip injury or be killed nearly to the ground. After pruning it makes a

good recovery. It needs a sunny site to produce a good, deep maroon color. It makes a good contrast plant with low spreading evergreens. It should not be planted where the clumps will become contaminated with quackgrass. Like most Japanese barberries, it has sharp spines. Zone 4.

GOLDEN JAPANESE BARBERRY (*Berberis thunbergii* 'Aurea'), 2-3 ft., is a selection that has clear yellow foliage through the entire summer. Some years the fall color changes to a bright red. At present it is not commonly available because of propagation difficulties. Zone 4; trial in zone 3.

REDLEAF JAPANESE BARBERRY (*Berberis thunbergii* 'Atropurpurea'), 3 ft., is similar to the Japanese barberry, except that it has a deep maroon color and is slightly less hardy. Zone 4.

Korean Barberry (*Berberis koreana*), 6-8 ft., is a vigorously growing shrub that has less ridged spines than do other barberries, making it easier to work with. Summer color of the foliage is green, with a red tinge on younger leaves. Fall color varies from a bright red in full sun to a purple-red in partial shade. Flowers are yellow and quite showy, in long pendant clusters. The fruits are green at first and turn bright red in late summer. They remain on the plant through the winter, but are not readily taken by birds. Korean barberry sometimes spreads short distances by suckering roots. Zones 3 and 4.

BAYBERRY

Bayberry (*Myrica pensylvanica*), 3-5 ft. This is an uncommon broadleaf evergreen that loses its leaves under Minnesota weather conditions. The glossy, dark green foliage makes this an attractive shrub through the growing season. In early winter the leaves are dark green; by spring they normally turn brown and drop. Bayberry grows well on acid, infertile soils. It is likely to suffer less damage in the winter if planted where it is protected from the winter sun. The small gray berries are produced on female plants beneath the new growth, so they are not visible on the exterior surfaces. Trial in zone 3 and 4, with some winter dieback possible in both zones.



Burning bush

Tall Hedge Buckthorn (*Rhamnus frangula* 'Tall Hedge'), 10-12 ft., is indistinguishable from columnar buckthorn.

BUFFALO BERRY

Buffalo Berry (*Shepherdia argentea*), 10-13 ft., is a coarsely branched shrub with narrow, silvery-green leaves. Each plant is of a single sex. The inconspicuous flowers bloom in May. Flowers on female plants are followed by berries that turn a bright red when they ripen in August. The berries can be used for jelly. Indians dried them to use in making pemmican. Birds also eat the fruits. This plant is tolerant of drought and alkaline soil. It should be planted in full sun. Branches end in sharp spines, making it an impenetrable shrub. It sends up some suckers near the parent plant. It is useful in border plantings, shelterbelts, windbreaks, barrier plantings, and for creating thickets for wildlife. Zones 3 and 4.

BURNING BUSH

Burning bush (*Euonymus alata*), 7-10 ft., is a shrub with good foliage and form. The twigs have corky ridges that are quite conspicuous and add winter interest. The elongated red fruits are showy but are seldom produced in large enough numbers to be effective. Previous plantings of the selection Compacta have not been dependably hardy in the Twin Cities area. There is a hardy, compact selection called Nordine, which was introduced because of the abundance of fruits it produces.

The burning bush has dark green, clean foliage during the growing season. In the fall it turns a deep red on sunny sites but in partially shaded areas it often takes on a pink to scarlet color.

Rabbits can severely damage this plant during the winter, often necessitating enclosing young plants with a cylinder of chicken wire. Zones 3 and 4.

BUSH HONEYSUCKLE

Bush Honeysuckle (*Diervilla lonicera*), 3 ft. This native shrub spreads by underground stems making it useful as a taller ground cover. It is adapted to a wide range of soil conditions, except for poorly drained soils. It grows best in full sun, but is tolerant of partial shade. The leaves are dark green, often with a red tinge. The fall color is often a maroon-red. The yellow flowers are rather inconspicuous. Zones 3 and 4.

BOXWOOD

Boxwoods are broadleaf evergreens that are used extensively in the eastern United States for landscape purposes, but unfortunately there is only a single species that has proved hardy in Minnesota. It should be protected from the winter sun. If planted on the north, west, or east side where there is some shade, it does not have to be wrapped to prevent winter sun injury.

Korean Boxwood (*Buxus microphylla koreana*), 2 ft. with a spread of 3 ft. The winter color is often an olive to purple-green. The selection Wintergreen holds the green color better than the species. It does best planted where it will be in winter shade. It makes a satisfactory specimen plant and a useful plant for a small hedge. Protected sites in zones 3 and 4.

BUCKTHORN

In the past, the common buckthorn (*Rhamnus cathartica*) was used extensively for landscape plantings, particularly for hedges. It is not often planted today. Birds have distributed the seeds from landscape plants to nearby woodlands and it has now naturalized itself in many areas. It has an abundance of black berries and holds its dark green leaves late into the fall.

Columnar Buckthorn (*Rhamnus frangula* 'Columnaris'), 10-12 ft., is an upright plant with dark, glossy, green leaves. It produces black berries. This selection does not have the sharp spines at the end of the branches that the common buckthorn has. This plant occasionally suffers slight winter injury on exposed sites in the Twin Cities area. Adapted to the southern part of zone 4.

CARAGANA

Caraganas belong to a large genus containing many species that are mostly shrubs. If trained to a single stem a few species become treelike. Caraganas grow best in sunny locations and are tolerant of dry sites, but intolerant of poorly drained soils. Most have flowers that are yellow and pealike. Although the flowers are small, some are produced in profusion, making the plant showy. The foliage is quite free of insect problems, but is susceptible to leaf spot diseases that can cause premature defoliation. Most species have sharp spines, which make them difficult to work with. They are not bothered by mice and rabbits during the winter.

Some species are useful for shelterbelt plantings while the smaller ones are useful in foundation plantings.

Globe Caragana (*Caragana frutex* 'Globosa'), 3 ft., is a slow-growing dark green species useful for hedges. It makes a dense, almost formal hedge without pruning. It sometimes defoliates in late summer because of leaf spot. Although this plant has proven hardy in Minnesota trials, it is only now becoming commercially available. For many years it was available only through Canadian nurseries, but it is now being propagated in Minnesota nurseries. Zones 3 and 4.

Littleleaf Peashrub (*Caragana microphylla*), 8 ft., is similar to Siberian peashrub but it is a smaller plant and the leaves are a darker green. The cultivar Tidy has narrow leaflets and lemon-yellow flowers, making it attractive when it blooms in late May or early June. Hardy in zones 3 and 4.

Pygmy Peashrub (*Caragana pygmaea*), 5 ft., is a small, upright shrub with fine-textured foliage of dark green color. Flowers are small, yellow, and pealike, appearing in late May or early June. Useful in border or foundation plantings or for a hedge. In the past it has been used mainly in the Red River Valley area. Zones 3 and 4.

Russian Peashrub (*Caragana frutex*), 5 ft., is a compact suckering shrub that is excellent as a bank cover. The compound leaves are dark green with four leaflets. Zones 3 and 4.

Siberian Peashrub or Peatree (*Caragana aborescens*), 10-12 ft., is an upright shrub that is drought resistant and tolerant of alkaline soils. The attractive yellow, pealike flowers appear in May. These are followed by small pealike pods. Leaves are subject to leaf spot problems late in the season. This shrub is useful in shelterbelts and windbreaks and is sometimes used for informal hedges. Zones 3 and 4.

WEeping Siberian Peashrub (*Caragana aborescens* 'Pendula'), 3-7 ft. The size of this plant depends on whether it is grafted at ground level or on a standard to give it a trunk. This novelty is a selection of the Siberian peashrub that is of limited usefulness. It is not commonly available. Zones 3 and 4.

CHOKEBERRY

Chokeberries are shrubs that are useful for foundation, shrub border, or wildlife plantings. They do best in full sun. They can tolerate some shade, but growth is slow and sparse. The showy white flowers appear in May but are not pleasantly fragrant. They do best on a well-drained soil.

Black Chokeberry (*Aronia melanocarpa*), 5 ft. This plant is compact and is a more spreading shrub than the red chokeberry. The flowers are white in flat clusters, appearing in late May. The fruits are abundant but inconspicuous because of their black color. The foliage is dark green. This is an excellent shrub for foundation and border plantings in sunny locations. Zones 3 and 4.

Glossy Black Chokeberry (*Aronia melanocarpa* 'Elata'), 4 ft., differs from the above species in that it has glossy dark green leaves and stays smaller. Zones 3 and 4.

Red Chokeberry (*Aronia arbutifolia*), 5 ft., is an upright shrub with pinkish white flowers appearing in flat-topped clusters in late May. Fruits are small, round, red, and showy even after the leaves have fallen. The foliage is dark green, turning a brilliant red in the fall. It is safest to plant this species in the southern half of zone 4.

CHOCHECHERRY

Chokecherry (*Prunus virginiana*), 13 ft., is not commonly planted as an ornamental, probably because it is such a common native. Chokecherries require a well-drained soil and sunlight. The fruits are attractive to wildlife and can be used in cooking. Adapted to zones 3 and 4.

Canada Red Cherry (*Prunus virginiana* 'Canada Red'), 13 ft., has leaves that emerge green and turn a dark red-maroon after several weeks. Its flowers and fruits are similar to the common chokecherry. Zones 3 and 4.

Shubert Chokecherry (*Prunus virginiana* 'Shubert'), 13 ft., is similar to Canada Red cherry. Zones 3 and 4.

CISTENA SAND CHERRY

(see SAND CHERRY)

CLOVE CURRANT

(see CURRANT)

CORALBERRY

Coralberry (*Symphoricarpos orbiculatus*), 3 ft., is a shrub that is planted in foundation and border plantings. It spreads by suckers, which makes it useful for bank plantings. The flowers are inconspicuous because of their small size. The berrylike fruits of various sizes are tightly clustered at the tips of branches and in leaf axils. The shrub gets its name from berries that turn a bright red. They are retained on the plant into the winter but turn black after a hard freeze. Zones 3 and 4.

COTONEASTER

There are many species of cotoneaster but only a few that are hardy enough for Minnesota. There is a wide range in plant size; some are low ground covers, while others become large shrubs. Most have white or cream-colored flowers that have an unpleasant odor. The mature fruit is red or black, depending on the species.

Fireblight, a bacterial disease, has eliminated most of the cotoneasters in trials at the University of Minnesota Landscape Arboretum. Infection injury varies from tip injury to branch dieback to death of the entire plant. Infection in landscape plantings has not been as widespread as in the arboretum trials. The susceptibility to this disease should be considered before making extensive plantings of cotoneasters.

Cranberry Cotoneaster (*Cotoneaster apiculata*), 2 ft., is a low spreading shrub with arching branches. It is the hardiest of all the low cotoneasters but often shows winter dieback in exposed sites. The small, shiny green leaves and the bright red, cranberrylike fruits make this an attractive shrub for sites that have dependable winter snow cover. The small flowers are pink. Trial in zone 4.

Hedge Cotoneaster (*Cotoneaster lucida*), 5 ft., is the most commonly planted cotoneaster in Minnesota. In nurseries it is often incorrectly sold as Peking cotoneaster (*C. acutifolia*). The leaves are lustrous green and produce an abundance of black fruits. The fall foliage is often red. The hedge cotoneaster is susceptible to oystershell scale as well as fireblight. It is often planted for a formal hedge. Hardy in zones 3 and 4.

Many-flowered Cotoneaster (*Cotoneaster multiflora*), 8 ft. This species forms a large spreading shrub that may be 12 feet or more wide. It has large white flowers. The abundant fruits are a bright red. It is susceptible to fireblight. Hardy in zone 4; trial in zone 3.

CRANBERRY BUSH

Cranberry is a common name applied to two unrelated genera. It is applied to the high bush group included here, *Viburnum*, and also to the low vining plants that grow in sphagnum bogs, *Vaccinium* (the commonly eaten cranberry). The latter group is not adapted to upland growing conditions.

The viburnum group is useful for landscape plantings. The shrubs grow best in full sun, but are tolerant of some shade. Most will flower and fruit more abundantly in sunny locations. They are adapted to ordinary garden soils, but will grow on moist sites. Size within this group varies from 2 to 13 feet in height.

American Cranberry Bush (*Viburnum trilobum*), 7-12 ft., grows taller in shady locations. This native shrub blooms in June with large flat-topped clusters of white flowers. The outer row of sterile flowers is showy while the center consists of small fertile flowers that produce the berries. The berries are about ½ inch in diameter and each contains a single large flattened seed. Fruits turn bright red at maturity and are retained on the plant in pendant clusters into winter and early spring if not taken by the birds. The fruits can be used to make jelly. The three-lobed leaves are dark green during the growing season and will turn a bright red in the fall if the plant is growing in a sunny location. Zones 3 and 4.

Baileys compact American cranberry bush



ALFREDO AMERICAN CRANBERRY BUSH (*Viburnum trilobum* 'Alfredo'), 5-6 ft. This selection is denser than the species and is slightly broader. The summer foliage is a good green, turning red in the fall. Zones 3 and 4.

BAILEYS COMPACT AMERICAN CRANBERRY BUSH (*Viburnum trilobum* 'Baileys Compact'), 3-5 ft., is a selection made in Minnesota nurseries because of its compact growth habit. Unlike many compact selections of high bush cranberries, this selection is fruitful. This selection is dense and compact to the ground. It turns a bright red in the fall. This plant is useful for foundation plantings and shrub borders. Zones 3 and 4.

European Cranberry Bush (*Viburnum opulus*), 8-10 ft., has flowers that bloom in large flat-topped clusters in early June. Fruits turn red at maturity and usually remain on the plant until the following spring. They are not normally taken by birds until after they have frozen and thawed several times and if other food is scarce. This species appears to be the most susceptible to aphid injury, which causes the leaves at the tips of the branches to curl under, with the aphids on the underside. Zones 3 and 4.

COMPACT EUROPEAN CRANBERRY BUSH (*Viburnum opulus* 'Compactum'), 5 ft., is a dense, compact selection. It does not fruit and has little fall color. The summer foliage is a deep green. Zones 3 and 4.

DWARF EUROPEAN CRANBERRY BUSH (*Viburnum opulus* 'Nanum'), 2 ft., is very dense and so widespread that it can become 5 feet in diameter. It seldom flowers and consequently usually produces no fruits. It has little or no fall color. Summer foliage is a dark green. This plant is useful where a low mass of dark green is needed. Zones 3 and 4.

SNOWBALL EUROPEAN CRANBERRY BUSH (*Viburnum opulus* 'Roseum'), 13 ft., produces round clusters of sterile white flowers that make a spectacular show when in bloom. Foliage is dark green and is especially susceptible to aphids, which may disfigure it. It has little or no fall color and produces no fruit. Zones 3 and 4.

Sargent's Cranberry Bush (*Viburnum sargentii*), 10 ft., is somewhat similar to the European cranberry, but the flowers are larger. Aphids have not been a problem on this plant in University of Minnesota Landscape Arboretum trials. Zones 3 and 4.



Compact Lemoine deutzia

CURRENT

Although there are many native currants in Minnesota, those used as ornamentals are introduced species. Some fruiting currants and gooseberries are grown for their abundance of edible fruit. These are normally not satisfactory as ornamentals because they are susceptible to leaf spot diseases that often cause them to defoliate in midsummer unless chemical controls are applied.

Alpine Currant (*Ribes alpinum*), 3 ft., is a shade-tolerant shrub that has been used extensively in landscape plantings in Minnesota for many years. One of its major uses is for clipped, formal hedges. It is usually propagated from nonfruiting plants that are resistant to white pine blister rust. The foliage is dark green and with fine branches. It is susceptible to leaf spot disease that can defoliate plants in late summer. Nurseries have been making selections that are resistant to leaf spot disease. Annual defoliation of alpine currants can be prevented by spraying with a fungicide in midsummer. Zones 3 and 4.

Clove Currant (*Ribes odoratum*), 5-7 ft., is a shrub that is planted for its abundant yellow flowers that bloom in May. They have a spicy fragrance. Bloom lasts about one week. The foliage is a dark green. Zones 3 and 4.

DEUTZIA

Deutzia is a shrub commonly used for landscapes in areas with milder climates than Minnesota's. Its use in Minnesota is limited to one species and a selection



Gray dogwood

of that species. Those with pink flowers are not adapted to this area. Deutzia is useful for foundation planting or as part of a shrub border.

Lemoine Deutzia (*Deutzia x lemoinei*), 7 ft., is a hybrid that has clusters of small nonfragrant, pure white flowers in late May and early June. It does best when grown in full sun. Tip kill due to winter injury is a common occurrence and branch dieback will occur following severe winters. It is an attractive flowering shrub that is useful to those willing to prune out parts injured by the winter. It makes a quick recovery from winter injury, but blooms only on growth produced during the previous growing season. Adapted to the southern part of zone 4.

COMPACT LEMOINE DEUTZIA (*Deutzia x lemoinei* 'Compacta'), 5 ft., is a shrub that is denser and smaller than the Lemoine deutzia. Hardiness is similar to the Lemoine deutzia. Adapted to the southern half of zone 4.

DOGWOOD

Dogwoods are common as both planted and native shrubs. One native species, the pagoda dogwood, can be treelike, but the showy flowering tree dogwoods of the east are not hardy in Minnesota. Dogwoods grow well in full sun or partial shade. They grow well on ordinary soils and most are tolerant of moist sites. Most grow fast. Those with colored stems are more attractive if one-third of the old stems are removed each spring before growth starts.

Gray Dogwood (*Cornus racemosa*), 8 ft., has small white flowers that appear in mid-June in small, flat-topped clusters. These are followed by white berries on red stems. The fruits are readily eaten by birds but

the red stems persist even after the leaves drop. Foliage takes on a purplish color in fall. Stems are gray and twiggy. This native shrub spreads by underground roots, making it useful for a tall bank cover or wildlife plantings. It is an excellent shrub for planting at the edge of woods. Zones 3 and 4.

Pagoda Dogwood (*Cornus alternifolia*), 15 ft., is a large native shrub or small tree with horizontally spreading branches. Unlike other dogwoods, the leaf and branching arrangement is alternate rather than opposite. The small, creamy white flowers bloom in dense clusters in June. Fruits are dark blue. The pagoda dogwood appears to grow well on moist and semi-shady sites, although it can tolerate more sunlight and less moisture. Zones 3 and 4.

Red-twig or Red-Osier Dogwood (*Cornus sericea*), 10 ft., is a broad native shrub with spreading suckers that come up near the base of the plant or where branches touch the ground and take root. White flowers appear in June and are followed by white berries. The stems are bright red during the winter and early spring, but during the rest of the year they lose some of their brightness. Zones 3 and 4.

ISANTI RED-TWIG DOGWOOD (*Cornus sericea* 'Isanti'), 6 ft., is a slow-growing compact selection of the native red-twig dogwood that was made and named by the University of Minnesota. It is widely grown in Minnesota nurseries. It is susceptible to the same leaf spots as the species, but this is normally not a serious problem. The stem color in late winter is not as bright as on some dogwoods. Zones 3 and 4.

YELLOW-TWIG DOGWOOD (*Cornus sericea* 'Flaviramea'), 10 ft., is similar to the red-twig dogwood but has a yellow twig color. It has not been as vigorous as the red-twig dogwood. Zones 3 and 4.

Siberian Dogwood (*Cornus alba sibirica*), 5-7 ft., has cream-colored flat-topped clusters of flowers that appear in early June, followed by berries that turn blue at maturity in July. The young stems turn a coral red in late winter. This is a fast-growing dogwood although the following selections with variegated leaves (green and white or yellow and white) are much slower growing. These variegated selections normally do best where they are protected from the intense heat of the midday sun. The following variegated selections are sometimes offered for sale in Minnesota: *Argentemarginata*, with green leaves edged with white; *Gouchaultii*, which has leaves that are variegated with yellowish-white; and *Spaethii*, which has leaves broadly edged with yellow. These are all hardy in zones 3 and 4.

Variegated Dogwood (see Siberian Dogwood).

Yellow-twig Dogwood (see Red-twig Dogwood).

ELDERBERRY

Elderberry shrubs grow so vigorously that they are almost weedy. They are adapted to a wide range of soils, but grow fastest on a moist fertile soil. Although shade tolerant, the quantity of bloom and fruit is decreased in the shade. Two species of elderberries are native to Minnesota.

American Elder (*Sambucus canadensis*), 8 ft., is a coarse native shrub with white flowers in flat-topped clusters that bloom in late June. These are followed by small black berries in late summer, ripening over a long time. The fruits are used for pies and for making elderberry wine. They are also readily eaten by birds. American elder can be planted as a background shrub and used in wildlife plantings. The selection Aurea has golden leaves and bright red fruits. Zones 3 and 4.

European Red Elder (*Sambucus racemosa*), 8-10 ft., is a shrub grown in borders. It is tolerant of semi-shade. The foliage is dark green and the fruit is red. This shrub and selections from this species are susceptible to cane borers, which cause whole branches to wilt and turn brown. A plant with several infected branches is unsightly. Zones 3 and 4.

REDMAN ELDER (*Sambucus racemosa* 'Redman'), 8 ft., is a cutleaf selection that forms a compact plant with red fruits. Hardy in zones 3 and 4.

SUTHERLAND GOLDEN ELDER (*Sambucus racemosa* 'Sutherland Golden'), 12 ft., is the brightest yellow selection of elderberry species evaluated at the arboretum. It is a vigorous grower, but is susceptible to the cane borer. Hardy in zones 3 and 4.

Scarlet Elder (*Sambucus pubens*), 8 ft., is a native woodland shrub that is the first to come into leaf in the spring. It is often found at the edges of woods. It has pyramidal clusters of creamy white flowers that open in early May. These are followed in July by scarlet red inedible berries. This shrub is of questionable value in foundation or border plantings, but is good for naturalizing in shady areas. Zones 3 and 4.

EUONYMUS

(see also BURNING BUSH)

This plant has several common names including Burning Bush and Wahoo, which have separate listings in this publication.

This group varies in hardiness. The flowers are very small, but the plant is grown primarily for its abundance of showy fruit. A few species produce little fruit, or the fruit is not conspicuous, but they are grown for their attractive fall color or other characteristics.

Euonymus tolerates a wide variety of soil situations and is tolerant of some shade. Fruiting and fall color are normally better where the plants receive abundant light.

European Euonymus (*Euonymus europaea*), 8 ft., is a shrub grown primarily for its showy fruits. In late summer, fruits turn a rose-red and remain attractive until late fall at which time they become tan in color. Summer foliage is a dark green, but there is little color change in the fall. This plant is sometimes pruned to a single trunk and grown as a small tree, 10-13 feet tall. This euonymus creates a spectacular show in the fall. Hardy in zone 4, but often with some twig dieback; trial in zone 3.

ALDENHAM EUONYMUS (*Euonymus europaea* 'Aldenhamensis'), 10 ft., tends to be more compact and fruitful than the species. It sometimes is injured in winter in the southern half of zone 4.

Turkestan or Dwarf Euonymus (*Euonymus nanus turkestanica*), 3 ft., is a fine-textured upright shrub with narrow leaves, but there are some forms of this species that tend to be low and spreading. The leaves are dark green in the growing season and turn a purple-green during the winter. The pendant fruits are about 1/2 inch in diameter and are pink, with an orange seed. They ripen in August. Hardy in zones 3 and 4.

FALSE SPIREA

This plant has been planted in Minnesota for many years. It is normally grown in shady areas, although adapted to full sun. It spreads by underground stems, producing a thicket effect. This makes this plant useful for a tall bank cover on north-facing slopes. The compound leaves give the plant a rather fine texture. The pointed flower clusters are a creamy white. There are several species adapted to Minnesota, but the one described is the only one that is occasionally available in Minnesota.

Ural False Spirea (*Sorbaria sorbifolia*), 5 ft., has flowers that appear in late June or early July. The brown seed clusters are not especially attractive and are sometimes removed. Zones 3 and 4.

Emerald Mound honeysuckle



FLOWERING ALMOND

Flowering Almond (*Prunus glandulosa*), 4 ft., flowers in early May. The flowers are white to pink and single to double. The cultivars of this species are more desirable than the species, such as *Alboplena*, which has double white flowers, and *Sinensis*, which has double pink flowers. Zone 4.

FORSYTHIA

Forsythia is a favorite spring flowering shrub in many areas with milder climates than Minnesota's. Where this shrub is fully hardy, it is covered with bright yellow flowers in the spring before it comes into leaf. In Minnesota the flower buds of most species and selections are killed by the winter; some suffer dieback of woody parts as well. Forsythia grow best in full sun on a well-drained soil.

Border Forsythia (*Forsythia intermedia*), 8-10 ft., is a large, spreading shrub with arching branches. This species and its many cultivars are very showy when in bloom but unfortunately we seldom see good bloom in Minnesota. The flower buds are killed at temperatures lower than about -15°F (-26°C). This plant is not recommended except in very sheltered locations or unless they receive some winter protection. Trial in the southern part of zone 4.

Early Forsythia (*Forsythia ovata*), 6-8 ft., is the hardiest and the earliest of the forsythias. The flowers are smaller and lighter yellow in color than those of some forsythias, but are still very attractive. The plant is also more upright and the branches are stiffer than most. Bloom can be expected in the Twin Cities area about three years out of five if planted in protected sites. Zone 4.

HIGH BUSH CRANBERRY

(see CRANBERRY BUSH)

HONEYSUCKLE

Honeysuckle is a common name applied to a number of woody and herbaceous plants. Here it applies to the genus *Lonicera*. This group is made up of fast-growing shrubs that are variable in size. They are best grown in full sun, but are tolerant of light shade, although they become sparse and leggy when grown in the shade. They are tolerant of most soil conditions except for poorly drained soils. Most are quite free of insect and disease problems. Many produce an abundance of berries that are inedible, except by birds. Fruit color is variable depending on the species. A few produce no fruit. This group has some selections that are adapted to foundation and border plantings and for shelterbelts and wildlife plantings.

Amur Honeysuckle (*Lonicera maackii*), 10 ft., is a large shrub with horizontally spreading branches. The white to cream-colored flowers bloom in early June. The red fruits are borne in flat-topped clusters in late fall. This plant is useful as a background shrub and in wildlife plantings. Zones 3 and 4.

Clavey's Dwarf Honeysuckle (*Lonicera* x *xylosteoides* 'Clavey's Dwarf'), 5 ft., is a broad, dense plant that is often used for hedging. Leaves are a medium green. Spider mites are sometimes a problem. Zones 3 and 4.

Emerald Mound Honeysuckle (*Lonicera xylosteum* 'Emerald Mound'), 3 ft., tends to be more horizontal than upright. This habit allows the plants growing together to create a composite mass useful in foundation plantings or ground covers. The plant has a dark green color and does not fruit. Zones 3 and 4.

Hedge King Honeysuckle (*Lonicera* x *xylosteoides* 'Hedge King'), 5 ft. This is reported to have an upright growth habit. It has yellow flowers followed by fruits that turn red at maturity in the fall. Adapted to zone 4; trial in zone 3.

Tatarian Honeysuckle (*Lonicera tatarica*), 10 ft. This large shrub is widely planted in shelterbelts, shrub borders, and wildlife plantings. It is sometimes subject to breakage by snow. Flower color varies from white to light red. Fruit color varies from yellow to red. Zones 3 and 4.

Zabel's Honeysuckle (*Lonicera* x *korolkowii* 'Zabeli'), 8 ft., is a vigorously growing honeysuckle with dark green leaves. The abundant flowers open a rosy red and become pink as they age. These are followed by many berries that turn red at maturity. The plant itself is denser than the more commonly planted Tatarian honeysuckle, making it a better landscape plant. Zones 3 and 4.

HOPTREE

Common Hoptree (*Ptelea trifoliata*), 12 ft., is a large shrub or a small tree with trifoliate leaves resembling poison ivy. The inconspicuous flowers are followed by clusters of flattened fruits that are winged on each side. Hardy in zone 4; trial in zone 3.

HYDRANGEA

Hydrangeas are one of the few deciduous shrubs that normally grow better in semi-shade than in full sun. They are also tolerant of full shade, and will produce bloom. Most hydrangeas grown in Minnesota normally have flowers that are green when they first appear and turn white. One species has a pinkish tinge to the flowers. Those with bright blue and pink flowers have not been hardy. Hydrangeas grow best on a fertile, moist soil, but the soil must have drainage. The large leaves are dark green.

Annabelle Hydrangea (*Hydrangea aborescens* 'Annabelle'), 3 ft., is one of the showiest hydrangeas that can be grown in Minnesota. It has rounded flower clusters up to one foot in diameter. The flowers are larger and whiter than the older Hills of Snow hydrangea described below. The stems of this plant normally are killed partway back during the winter. It performs best when each stem is cut to ½ inch above the first pair of buds above the ground. This is normally done in early spring, which allows the dried flower clusters to add interest to the winter landscape. This plant is useful in foundation plantings in shady areas. Zones 3 and 4.

Hills of Snow Hydrangea (*Hydrangea arborescens* 'Grandiflora'), 3 ft., has greenish white flower clusters up to 8 inches in diameter. At present the cultivar Annabelle is planted in preference to this one. Spring pruning should be the same as prescribed for Annabelle. Zones 3 and 4.

Peegee Hydrangea (*Hydrangea paniculata* 'Grandiflora'), 8 ft. This plant is often grown with a single stem, giving the plant a somewhat treelike appearance. Otherwise it often grows with two or three stems. This hydrangea has large pointed clusters. When they open in August they are white but they take on a pink or purplish color as they age. During the fall and winter they turn brown, but do add winter interest to the landscape. By removing some of the side or lateral branches, fewer flower clusters are produced but those produced will be much larger. Thinning of the lateral branches is the only pruning required of this hydrangea. This shrub is used for shrub border plantings. Some are used as small, specimen lawn trees. Hardy in zone 4; trial in zone 3.

JUNEBERRY

Juneberry is but one of the many common names used for the genus *Amelanchier*. Other names include: saskatoon, shadblow, and serviceberry.

This is a diverse group that ranges in size from shrubs as low as 3 feet to medium trees reaching 30 feet in height. Juneberries do best in full sun, but will grow in partial shade. Fewer flowers and fruits will be produced in the shade. Juneberries require a well-drained soil. The leaves have a silvery appearance as they emerge. All Juneberries have white flowers that are followed by fruits that mature in July. The green fruits first turn red and then blue-black at maturity. The fruit size is dependent on the species or selection. Fruits are edible, but quite bland and normally taken

by birds. The foliage normally turns a bright red in the fall if grown in a sunny location. There is considerable confusion over the identification of specific species of Juneberries in the nursery trade.

Regent Juneberry (*Amelanchier* 'Regent'), 7-10 ft., is a seed-propagated selection that has abnormally large fruits. It is commonly available in the nursery trade. Zones 3 and 4.

Annabelle hydrangea



LEATHERWOOD

Leatherwood (*Dirca palustris*), 6 ft., is a native shrub that grows best on a fertile, moist soil. It grows in full sunlight but does as well in partial shade, providing it does not have severe root competition for moisture and nutrients. When grown in full sunlight it becomes quite dense. It often grows with a single stem, but normally not more than two or three. It bears small, pale yellow flowers prior to coming to leaf in early spring. Leaves are a medium green and turn a clear yellow in the fall. It is useful for foundation plantings or informal hedges. It is not commonly available in the nursery trade. Zones 3 and 4.

LILAC

Lilacs are a diverse and useful group of flowering shrubs adapted to growing under Minnesota conditions. They persist indefinitely as attractive plants in the landscape. Lilacs require full sun to produce the abundance of bloom for which the group is known. They are tolerant of a wide range in soil fertility but are intolerant of poorly drained soils.

Spent blooms are often removed, but it is doubtful if this increases the next year's bloom significantly.

The old blooms are unattractive, but the seed pods add some winter interest. It might prove beneficial to remove spent flowers from young, recently transplanted lilacs, but once they reach a size making it difficult to remove the blooms, it isn't practical.

Chinese Lilac (*Syringa x chinensis*), 10 ft. This lilac is often incorrectly called the Persian lilac or rothomagensis lilac. It is the result of a cross of the cutleaf lilac and the common lilac. It is a compact nonsuckering lilac that is useful for informal hedges, in the shrub border, or as a snow catch in shelterbelts. The fragrant lavender and purple flowers are smaller than the common lilac, but are borne in large clusters. Chinese lilac is fast growing and requires little pruning. The dark green leaves are much smaller than those of the common lilac. Zones 3 and 4.

Common Lilac or French Hybrid Lilac (*Syringa vulgaris*), 12-15 ft., are the names often applied to this group of hybrids. Many of the early selections were made by French plantmen. This group has the show-

crowding, remove most of the suckers, leaving six to eight suckers for future growth; one-third of the older stems can be removed to keep the plants perpetually young.

Another alternative in handling large overgrown lilacs is to remove the branches and suckers to train them as a small tree that often has an almost Oriental appearance.

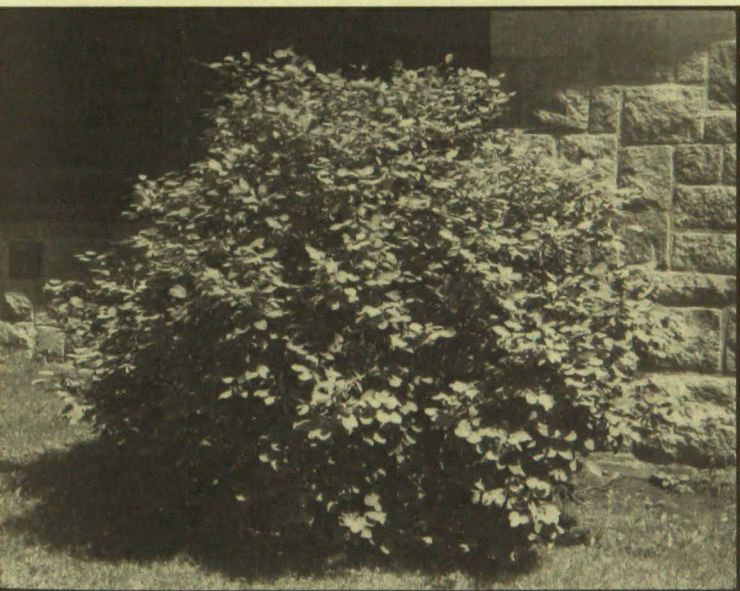
All the lilacs in this group are pleasantly fragrant. Some have single flowers, others double.

There are several hundred selections of lilacs in this group. The Minnesota Landscape Arboretum has nearly one hundred in the lilac collection. Those with an interest in this group are encouraged to visit the collection, which is often in bloom during the third week of May. This group of lilacs is hardy in zones 3 and 4.

Miss Kim lilac



Leatherwood



iest flowers of any group of lilac hybrids. Because of the influences of crosses with other species, the beginning of bloom varies by about 10 days. By selecting some of the early hybrids the bloom period can be extended, although the early blooming hybrids tend to have somewhat smaller flower clusters.

These lilacs are propagated either by budding (a form of grafting) or, preferably, from cuttings. French hybrid lilacs recover fastest from transplanting if they are moved with a ball of soil. If they are moved bare root it often takes several years before they grow normally and bloom.

Some selections have a tendency to produce many suckers from the base of the plant. To prevent over-

Following are some selections that are available at local nurseries:

CHARLES JOLY LILAC (*Syringa vulgaris* 'Charles Joly') has double, deep purple, fragrant flowers. It is a heavy bloomer.

CHARLES TENTH LILAC (*Syringa vulgaris* 'Charles Tenth') has single, deep lavender flowers and is a heavy bloomer.

CHARM LILAC (*Syringa vulgaris* 'Charm'). Flowers are single, bluish lavender, and fragrant. It is a heavy bloomer.

DE MIRIBEL LILAC (*Syringa vulgaris* 'De Miribel') has single, deep lavender, fragrant flowers and is a heavy bloomer.

EDITH CAVELL LILAC (*Syringa vulgaris* 'Edith Cavell'). Its single, white, fragrant clusters could be better formed. It is an abundant bloomer.

FIRMAMENT LILAC (*Syringa vulgaris* 'Firmament') has single, good blue, fragrant flowers and a medium to abundant bloom.

KATHERINE HAVEMEYER LILAC (*Syringa vulgaris* 'Katherine Havemeyer') has double, lavender, fragrant, large clusters and a medium quantity of bloom.

LUDWIG SPAETH LILAC (*Syringa vulgaris* 'Ludwig Spaeth') has single, deep red-purple flowers. It is a good bloomer.

MADAME LEMOINE LILAC (*Syringa vulgaris* 'Madame Lemoine') has double, white blooms.

MICHEL BUCHNER LILAC (*Syringa vulgaris* 'Michel Buchner') has double, lavender and lavender-blue flowers. It is a good bloomer.

MISS ELLEN WILLMOTT LILAC (*Syringa vulgaris* 'Miss Ellen Willmott') has double, white flowers.

MONTAIGNE LILAC (*Syringa vulgaris* 'Montaigne') has double, pale lavender-blue, fragrant flowers. It is a good bloomer. Young plants at the arboretum had a tendency to be somewhat leggy.

MRS. EDWARD HARDING LILAC (*Syringa vulgaris* 'Mrs. Edward Harding') has double, medium purple, fragrant flowers. The quantity of bloom varies from medium to abundant.

MRS. W. E. MARSHALL LILAC (*Syringa vulgaris* 'Mrs. W. E. Marshall') is a good bloomer with single, deep purple, fragrant flowers.

NIGHT LILAC (*Syringa vulgaris* 'Night'). This lilac has single, dark red-maroon flowers. It has a tendency to bloom heavily every other year, but does bloom each year.

PAUL THIRION LILAC (*Syringa vulgaris* 'Paul Thirion') has double, deep rosy red-wine to lavender-purple flowers. It blooms heavily every other year.

PRESIDENT GREVY LILAC (*Syringa vulgaris* 'President Grevy') has double, lavender-blue flowers. It is a heavy bloomer.

PRESIDENT LINCOLN LILAC (*Syringa vulgaris* 'President Lincoln') has single, blue flowers with only a lavender tint. It is a heavy bloomer, but the clusters are small.

VESTALE LILAC (*Syringa vulgaris* 'Vestale') is a good bloomer, with single, white flowers.

Late Lilac (*Syringa villosa*), 10 ft., is an upright shrub with dense, dark green foliage. The flowers are usually pale purple, but are sometimes white. Flowers open after the common lilac has finished bloom. Hardy in zones 3 and 4.

Meyer Lilac (*Syringa meyeri*), 4 ft. This lilac has been listed under a number of names over the past few years such as *Syringa palibiniana* and Korean lilac. This plant blooms 10 to 14 days later than the common lilac. The abundant, fragrant, violet-purple flowers are

small and occur in small clusters. The plant is compact and has small, dark green, rounded leaves. It produces some suckers. This lilac is sometimes grafted on a standard, giving it a trunk and a miniature treelike appearance. Zones 3 and 4.

Miss Kim Lilac (*Syringa velutina* 'Miss Kim'), 8 ft., is a compact plant with foliage to the ground. The foliage is dark green, occasionally taking on a red-dish purple fall color. The pale lavender, fragrant flowers bloom after the common lilac has finished blooming. The flower clusters are rather small but abundant. This is an attractive plant for foundation plantings and shrub borders. Zones 3 and 4.

Prestonian Hybrid Lilac (*Syringa* x *prestoniae*), 10-12 ft. These are late blooming lilacs resulting from a cross of *Syringa reflexa* x *S. villosa*. They tend to become large plants. Some have leaves that are rather coarse and that have a rugged appearance by late summer. This group produces few suckers.

DONALD WYMAN LILAC (*Syringa* x *prestoniae* 'Donald Wyman'), 13 ft., is a heavy bloomer with single, clear purple blooms opening over a long period of time. Leaves are dark green, smaller than type, and remain attractive till the end of the growing season. Zones 3 and 4.

JAMES MACFARLANE LILAC (*Syringa* x *prestoniae* 'James MacFarlane'), 13 ft., is a good bloomer with single, clear pink flowers. The large, medium green leaves can become unattractive by the end of the growing season. Zones 3 and 4.

NOCTURNE LILAC (*Syringa* x *prestoniae* 'Nocturne'), 13 ft., is a sparse bloomer with single, light bluish purple flowers and coarse foliage. Zones 3 and 4.

Royalty Lilac (*Syringa* 'Royalty'), 13 ft., is a hybrid late-blooming lilac with single, fragrant, lavender flowers. The foliage is somewhat coarse. Zones 3 and 4.

MOCK ORANGE

This name is probably derived from the fragrant white flowers resembling orange flowers that some species and cultivars of mock oranges have. Some mock oranges are without fragrance. Flowers are single, semi-double, or double and they vary in size. The bloom period is quite short, normally not more than 7 to 10 days. This is probably one reason why there are only a few kinds of mock oranges in the nursery trade although there are many species and cultivars. The summer foliage is dark green and quite free of pest and disease problems. There is no color change in the fall. Some of the older mock oranges have a tendency to become large shrubs and quite leggy in appearance. It is possible that most mock oranges will suffer from occasional tip kill in zone 4 and quite often in zone 3.

Bouquet Blanc Mock Orange (*Philadelphus* 'Bouquet Blanc'), 4 ft., has fragrant, single flowers 1 inch in



Nannyberry

diameter. The plant has a moundlike habit of growth. Adapted to zone 4; trial in zone 3.

Galahad Mock Orange (*Philadelphus 'Galahad'*), 5-7 ft., has small glossy leaves and fragrant medium-size flowers. Adapted to zone 4; trial in zone 3.

Golden Mock Orange (*Philadelphus coronarius 'Aureus'*), 5 ft., is grown primarily for its greenish yellow foliage. It sometimes exhibits leaf scorch if planted on the south side of white walls. The flowers are single, white, and very fragrant. Zone 4.

Lemoine Mock Orange (*Philadelphus x lemoinei*), 5-7 ft. Flowers are single, fragrant, and 1 1/3 inches in diameter. Adapted to zone 4; trial in zone 3.

Miniature Snowflake Mock Orange (*Philadelphus 'Miniature Snowflake'*), 3 ft., is a double, fragrant mock orange that produces a dense bush. Plants in trials at the arboretum have shown severe dieback.

Minnesota Snowflake Mock Orange (*Philadelphus 'Minnesota Snowflake'*), 7-8 ft., has a double, fragrant flower up to 2 inches in diameter. It is subject to annual dieback in both zones 3 and 4.

Virginal Mock Orange (*Philadelphus x virginalis*), 10-13 ft., has a large (two inches) semi-double fragrant flower. This mock orange has a tendency to get leggy. Adapted to zone 4; tip kill can be expected if planted in zone 3.

GLACIER MOCK ORANGE (*Philadelphus 'Glacier'*), 7 ft., has double, fragrant flowers one inch in diameter. Adapted to zone 4; trial in zone 3.

NANKING CHERRY

Nanking Cherry (*Prunus tomentosa*), 10 ft., is often a shrub with a treelike trunk at the ground. Although the plant itself is hardy, the flower buds are often killed during the winter. When they do bloom, they often entirely cover the plant. The flowers are followed by fruits 1/2 inch in diameter that are either white or scarlet red at maturity. They are eaten by birds and are also useful for jellies. Remove or thin some of the branchlets to encourage active growth and development of fruit. This shrub is useful in the shrub border. Hardy in zone 4; trial in zone 3.

NANNYBERRY

Nannyberry (*Viburnum lentago*), 15 ft., is a common woodland native in many areas of Minnesota. It is also used as a shrub for shrub borders and foundation plantings. Occasionally one will find native specimens that are treelike. This plant has glossy green leaves. It blooms in late May with clusters of ivory-white flowers. The green, oval fruits turn black at maturity. Each fruit contains a single flat seed. The fruits are retained on the plant into the winter or until taken by birds. Plants that are grown in shady areas have little or no fall color, whereas plants grown in a sunny area often take on a good red or reddish purple color. Nannyberry will grow on moist sites, but grows well on ordinary soils. It produces some suckers. Zones 3 and 4.

NINEBARK

This is a relatively small genus with limited usefulness for landscape purposes. It has several faults. One is that many species of ninebark are fast growing and can become too large for their space in a short time. Despite the fact that Minnesota has a native ninebark, all species can occasionally suffer dieback in winter or be broken by snow. The flowers, which have somewhat of a grayish appearance, are not especially showy. The red-brown seed pods borne in clusters are more showy than the flowers. The foliage has a dark green color.

Dwarf Ninebark (*Physocarpus opulifolius 'Nanus'*), 3-5 ft., is a dense, dark green arching shrub that is useful in foundation plantings or clipped hedges. Hardy in zone 4; trial in zone 3.

Golden Ninebark (*Physocarpus opulifolius 'Luteus'*), 7-10 ft., has leaves that are yellow when they appear in the spring. As the leaves age they become more green. This shrub has an arching growth habit. It is useful in the back of a shrub border. Zones 3 and 4.

PEASHRUB

(see CARAGANA)



Coronation Triumph potentilla

POTENTILLA

In some areas potentilla is more commonly called bush cinquefoil. Despite the fact that this shrub is native to Minnesota, all of the selections are from potentilla from other areas. Potentilla does best when grown in full sun on upland soils, although it is found in the wild on some moist sites.

This shrub has several flushes of bloom throughout the growing season. The main flush of bloom occurs in June. The native species has yellow flowers, but selections have been made with pale yellow, bright yellow, orange, red-orange, and white flowers. Selections that have been made for their orange and red-orange flowers tend to bloom yellow under Minnesota conditions. Potentillas bloom best if one third of the oldest stems are removed to the ground each year before growth starts. The growth habit of the plant varies from spreading to upright. Spider mites can cause potentilla foliage to discolor during the warmest part of the summer and should be controlled. All potentillas are hardy in zones 3 and 4.

Coronation Triumph Potentilla (*Potentilla fruticosa* 'Coronation Triumph'), 3 ft., is a recent Canadian introduction with bright yellow flowers.

Gold Drop Potentilla (*Potentilla fruticosa* 'Gold Drop,' formerly *Potentilla fruticosa* 'Farreri'), 2 ft., has

medium yellow flowers. The plants are quite compact.

Goldfinger Potentilla (*Potentilla fruticosa* 'Goldfinger'), 3 ft., is a selection with bright yellow flowers 3/4 to 1 inch in diameter. The foliage is a dark green.

Jackman Potentilla (*Potentilla fruticosa* 'Jackman'), 3-4 ft., has deep yellow flowers 1 inch in diameter.

Katherine Dykes Potentilla (*Potentilla fruticosa* 'Katherine Dykes'), 2 ft., has medium-size, creamy yellow flowers.

Mount Everest Potentilla (*Potentilla fruticosa* 'Mount Everest'), 2 ft., is an upright selection with white flowers.

Primrose Beauty Potentilla (*Potentilla fruticosa* 'Primrose Beauty'), 3 ft., has pale yellow flowers with a broad growth habit. The foliage is silvery gray.

Red Ace Potentilla (*Potentilla fruticosa* 'Red Ace'), 2 ft., is a spreading plant with apricot-tinged yellow flowers instead of the red flowers it is reported to have in England, where it was selected. This has not been a satisfactory plant in Minnesota.

PRIVET

Privets are used extensively in foundation plantings and hedges in areas with milder climates. Even the hardiest privets are subject to winter injury in Minnesota.

Cheyenne Privet (*Ligustrum vulgare* 'Cheyenne'), 5 ft. This is the hardiest privet, but it will occasionally dieback severely during some winters. It has a dark green, fine foliage. Flowers are small and white. Trial in zone 4.

RHODODENDRON

(see also AZALEA)

Rhododendrons can be either evergreen or deciduous. Botanically, rhododendrons differ from azaleas by the number of anthers in their flowers. Azaleas have 5 anthers whereas rhododendrons have 10 or more. In general, azaleas and rhododendrons that lose their leaves in the winter come through Minnesota winters better than those that are evergreen.

Like azaleas, they like a moist acid soil, but require soil drainage. Acid peat moss helps acidify the soil as well as increase the moisture-holding capacity of the soil. Plants seem to grow better if they are planted in areas where they are protected from the intense heat of the midday sun during the summer. Most evergreen rhododendrons seem to survive the winter better if they are planted in an area where they are protected from the winter sun. This protection seems to help minimize water loss. Like azaleas, the flower

buds of rhododendrons are less hardy than the vegetative parts. This explains why seemingly healthy plants fail to bloom.

Catawba Rhododendron (*Rhododendron catawbiense*), 3-4 ft., is a dark green broadleaf evergreen with large clusters of lavender flowers. The flower buds are not always fully hardy. This plant becomes broad with age. It is important that this plant be protected from the winter sun. If natural conditions do not provide shade, artificial shade such as burlap should be provided. Trial in the southern half of zone 4.

Korean Rhododendron (*Rhododendron mucronulatum*) 3-4 ft., is a deciduous rhododendron with abundant medium-size lavender flowers that cover the shrub before it comes into leaf. In the Twin Cities area flowers open in early May and are occasionally injured by spring frosts. There are named selections of this species with clear pink flowers. Unfortunately, these are not available locally. Zones 3 and 4.

PJM Rhododendron (*Rhododendron* 'PJM'), 3 ft., is an evergreen rhododendron with small leaves. It has clusters of lavender flowers. Hardy in zone 4; trial in zone 3.

Rhodora (*Rhododendron canadensis*), 3 ft., is a deciduous rhododendron with small lavender flowers. It grows best on a moist site. It loses its leaves in the winter. Zones 3 and 4.

ROSE

Roses can be divided into three categories depending on the winter protection required. Space prohibits the listing of the names of many roses adapted to Minnesota's growing conditions. Additional information on the culture, description, and performance of roses is available at county agricultural extension offices. Horticultural Fact Sheet 17, *Culture of Garden Roses*, deals with the tender types of roses; Arboretum Review 22, *Shrub and Old-fashioned Roses*, deals with the other types.

The first category includes the tender type that require protection to survive. The most practical method of protection is tipping the plant in a trench from about October 15 until April 1. This method is locally referred to as the "Minnesota tip." The roses in this group are: hybrid tea, floribunda, multifloras, miniatures, and climbing roses.

The second group will normally dieback to the ground if they don't receive adequate snow cover. Since snow protection is not dependable, mounding the base of the plants with 2-3 feet of loose marsh hay will normally provide adequate protection. Many of the old-fashioned roses are in this category: gallicas, moss, centifolias, bourbons, albas, hybrid musks, and some shrub roses.

The smallest category includes those roses that survive and bloom without winter protection. They are sometimes subject to twig dieback. These include: rugosa hybrids, some shrub roses, and some species roses.

ROSE ACACIA

Rose Acacia (*Robinia hispida*), 5 ft., is in the pea family. It is a suckering shrub that creates a thicket. The branches of the plant are covered with stiff, black bristles. The large pealike, rosy-lavender flowers are borne in long clusters that appear in June. This plant has potential as a tall bank cover. Some tip dieback can occur after a severe winter. Adapted to zone 4; trial in zone 3.

SAND CHERRY

Purple-leaf or Cistena Sand Cherry (*Prunus x cistena*), 7-8 ft., has leaves that are a deep maroon color throughout the entire growing season. The flowers are pale pink, but not abundant. It needs a sunny location, with well-drained soils. As the shrub ages it has a tendency to become leggy but it can be renewed by pruning the entire plant to within 2 inches of the ground before growth starts in the spring. Adapted to zones 3 and 4.

SILVERBERRY

Silverberry (*Elaeagnus commutata*), 6 ft. Both branches and leaves are covered with silvery scales, giving the entire plant a silvery appearance. The fragrant flowers are silvery on the outside with yellow centers. This plant is native in western Minnesota and is sometimes planted in wildlife plantings or where a contrast in foliage color is desired. It has the objectionable habit of producing many suckers. It sometimes loses its leaves prematurely because of disease. Zones 3 and 4.

SMOKEBUSH

This plant is called smokebush because of the smoky appearance of its loose clusters of fine flowers. The flowers are seldom seen in Minnesota because of winter injury.

Common Smokebush (*Cotinus coggygria*), 15-20 ft. If winter injury does not occur, this plant can become almost treelike. It has produced some bloom in the arboretum plantings. Trial in zone 4.

ROYAL PURPLE SMOKEBUSH (*Cotinus coggygria* 'Royal Purple'), 10 ft., is grown for its rich, deep maroon

foliage. Some winter injury is common with this selection but it is desirable to cut the shrub back to 1 foot from the ground, even if no injury occurs. It makes a quick recovery and is more attractive than if it is not pruned. It must be grown in full sun to achieve the desired deep color. This plant seldom blooms because it is cut back. Adapted to zones 3 and 4 if handled as described above.

SNOWBALL BUSH

(see CRANBERRY BUSH, European)

SNOWBERRY

Snowberry (*Symphoricarpos albus*), 3 ft., is a fine-textured shrub with small pink flowers. It is grown primarily for its clusters of white berries borne at the tips of the branches. These are attractive from fall into early winter. This arching shrub is useful for foundation plantings, shrub borders, and bank covers. Zones 3 and 4.

SPIREA

There are many spireas but only a few are offered in the nursery trade. Possibly one reason for this is that some spireas have a short period of bloom, sometimes for less than a week. Most spireas have little or no color change in the fall. Spireas grow best in full sunlight and on well-drained soils.

Anthony Waterer Spirea (*Spiraea bumalda* 'Anthony Waterer'), 2 ft., becoming broad with age. This plant has a bright rosy lavender flower for a couple of months of the summer. Best bloom is achieved if plants are cut to the ground before growth starts in the spring. Zones 3 and 4.

Froebel Spirea (*Spiraea bumalda* 'Froebelii'), 3 ft., has flat clusters of bright pink flowers for a long season. Zone 4.

Goldflame Spirea (*Spiraea bumalda* 'Goldflame'), 3 ft., is new to Minnesota. In the spring, it has a bright golden yellow color that turns to green in the summer. The blooms are a light crimson in color. The fall foliage is often red. Adapted to zone 4; trial in zone 3.

Snowmound Spirea (*Spiraea nipponica* 'Snowmound'), 3 ft., is covered with white flowers in May. The foliage is dark green. It has had some severe dieback after severe winters. It makes a quick recovery after pruning. Zone 4.

Thunberg Spirea (*Spiraea thunbergii*), 4 ft., is the earliest spirea to bloom. It has white flowers and fine narrow leaves. Zone 4.

Vanhoutte Spirea (*Spiraea x vanhouttei*), 4 ft., is an arching shrub that has been planted in Minnesota landscapes for many years. It has an abundance of white bloom, but for only a short period. Zones 3 and 4.



Cutleaf staghorn sumac

SUMAC

This is a diverse group that is useful for extensive plantings. As a group sumacs are fast growing and tolerant of dry, infertile sites. Most have an attractive fall color. Many people are concerned about sumacs being poisonous. Although poison sumac is a native shrub, it is nevertheless uncommon. It occurs on moist sites, mostly in swamps. Poison sumac has hanging clusters of white berries. Sumacs with upright clusters and red fruits are not poisonous.

Cutleaf Sumac (see Staghorn Sumac).

Fragrant Sumac (*Rhus aromatica*), 4 ft., grows as a dense mound, making it useful where large mounds are desired in the landscape. Unlike the other sumacs described here, it has three-lobed leaves. The red berrylike fruits are produced in dense clusters at the tip of some branches. There is usually little fall color. Hardy in zone 4; trial in zone 3.

Smooth Sumac (*Rhus glabra*), to 8 ft., depending on the site and strain. This native shrub is useful for a tall bank cover. It spreads over a large area by root suckers, creating colonies. Some of the colonies will have upright clusters of red fruits, while others will have none. Autumn color is normally a bright red. Zones 3 and 4.

Staghorn Sumac (*Rhus typhina*), 12 ft., is usually shrublike but if pruned can have a large trunk and become treelike. This native shrub spreads by root suckers. It can be differentiated from the smooth sumac by the dense, velvetlike hairs on the stems. Colonies may produce fruit, depending on their sex. Fall color is an intense red. Zones 3 and 4.

CUTLEAF STAGHORN SUMAC (*Rhus typhina* 'Laciniata'), 7-8 ft., is similar to the species but has finely cut leaves. The fall color varies from yellow to a red-orange, which is the more common. This selection sometimes suffers winter injury, which ranges from tip dieback to dieback almost to the ground. Even if winter injury is extensive, the plant can be pruned to the ground and it will make a quick recovery. It is often used as a tall bank cover but can be used as a specimen plant. Because of the coarseness of the branching, it takes on an almost sculptured appearance. Zones 3 and 4.

TAMARIX

The name tamarix is often confused with the name tamarack, but the plants are distinctly different in size and appearance. Tamarix is a shrub and tamarack is a conifer tree.

Five-stamen Tamarix (*Tamarix pentandra*), 10 ft. This is the hardiest of the tamarix species. The foliage is made up of very narrow, scalelike leaves. The pink flowers are produced in fluffy clusters in mid-July. Repeat bloom sometimes occurs through the summer. The shrub is inclined to be open and irregular in form. Use as a background shrub in the shrub border. The selection Summer Glow bears an abundance of bright pink flowers for much of the summer. Adapted to zone 4; trial in zone 3.

WAHOO

Wahoo (*Euonymus atropurpurea*), 10-13 ft., is an uncommon native shrub in moist woodlands in the southern part of the state. It is often unnoticed until fall and winter when its bright rosy pink fruits are conspicuous. Unlike the fruit of some of the other euonymus, which lose their color after hard freezes, these hold their color into the winter. This plant is not commonly available. It normally grows as a shrub, but it sometimes has a single stem, giving it a treelike appearance. It is useful as a specimen plant or in the shrub border. Zones 3 and 4.

WEIGELA

This shrub goes by a number of common names of which cardinal bush is one. Many have red flowers, but some have white or pink blooms. The shrub is vigorous, with dark green foliage. Its main fault is lack of hardiness. There aren't any in the nursery trade that are reliably hardy under Minnesota conditions. Tip dieback is common after most winters. Dieback to the base often occurs after severe winters. Best bloom is achieved if planted in full sun.

Old-fashioned Weigela (*Weigela florida*), 6 ft. This species has been quite hardy and normally produces a good bloom of large, rosy pink, bell-shaped flowers in late May. Some dieback can be expected following a severe winter. Trial in zone 4.

VARIEGATED WEIGELA (*Weigela florida* 'Variegata'), 4 ft., is grown mainly for the yellow variegated leaves. The flowers are clear pale pink. Zone 4.

Weigela Hybrids, 6 ft. A number of cultivars of hybrid origin are in the nursery trade. Vanicek, also

known as Newport Red, is the one that is commonly planted. The flowers are bright red and very showy. Dieback is common most winters. Trial in zone 4.

WAYFARING BUSH

Wayfaring Bush (*Viburnum lantana*), 8 ft. This shrub has green leaves that have a silvery appearance because of the many hairs. The flat-top clusters of creamy white flowers appear in mid-May. The fruits are at first green, then turn red, and then black at maturity. This shrub is useful for foundation plantings and shrub borders. Adapted to zone 4; trial in zone 3.

WILLOW

There are many species of willows native to the state. Many are shrublike although some are trees. In addition there are willows from other areas that are planted in Minnesota. They often occur on moist soils, but will grow well on other soils. Many lack qualities that make them desirable as ornamentals.

Arctic Willow (*Salix purpurea* 'Nana'), 7-8 ft., is finely branched shrub useful for formal and informal hedges. Because of the density of this shrub it is useful in shelterbelts. Adapted to zones 3 and 4, with occasional tip dieback in zone 3 due to winter injury.

Pussy Willow (*Salix caprea*), 15-20 ft. It is better to keep this plant smaller by cutting it to the ground annually in the spring before growth starts. This will encourage long, unbranched stems from the ground that will bear the large, silvery catkins. Zone 4.

Pussy Willow (*Salix discolor*), 15 ft., is also better if kept smaller by cutting back to the ground annually each spring before growth starts. This encourages long stems with catkins that are useful for cutting. Zones 3 and 4.

WINGED EUONYMUS

(see BURNING BUSH)

WINTERBERRY

Winterberry (*Ilex verticillata*), 7 ft., is a true holly, but loses its leaves during the winter. It is a native shrub that is often found on moist sites. It should be planted on acid soils and will grow well on upland soils. Plants are of a single sex, so three or more should be planted to assure that some of the plants will fruit. Ideally there should be two to three female plants and one male. The small fruits turn bright red at maturity and persist long after the leaves are gone. The fruits are eaten by many species of birds. Zones 3 and 4.

Woody Vines

There are few woody vines that are adapted to the conditions of Minnesota. Vines are useful in creating a feeling of informality in the landscape. Some can be used effectively to break up large architectural masses, especially if there is not enough space for trees or larger shrubs.

BITTERSWEET

Bittersweet is grown primarily for its fruits, which are used for winter bouquets. It requires good light and a support to produce an abundant crop of fruit. Since each bittersweet plant is usually of a single sex, several plants should be planted in an area to ensure fruiting. Bittersweet is adapted to a wide range of soils. The height of some of these vines is determined by the height of their support. Some vines will spread on the ground and are useful as a ground cover. Bittersweet vines climb by twining.

American Bittersweet (*Celastrus scandens*). This native species produces the most desirable bright orange fruits for fall arrangements. Hardy in both zones 3 and 4.

Chinese or Loeseneri Bittersweet (*Celastrus rosthornianus*) is sometimes sold in Minnesota. Although it is more fruitful than the American it is less desirable if grown for fruit since the hulls surrounding the fruit shatter easily. The hull is somewhat yellow while the fruit is a medium orange color. It is a very vigorous vine that will grow 30 feet tall if support is provided.

This plant suffers winter injury most years in zone 3, often killing back to the ground. It is normally hardy in zone 4, but can suffer injury there some years.

BOSTON IVY

Boston Ivy (*Parthenocissus tricuspidata*) often takes a couple of years to become established, but then grows vigorously. It climbs by tendrils that often have disk-like tips that will adhere to wood or masonry surfaces. Leaves are three-lobed and are dark green, but turn a bright red in the fall. Dieback to the ground is common with young plants and occasionally occurs on older plants. Trial in zone 3; adapted to zone 4.

CLEMATIS

Clematis (*Clematis hybrids*) is probably the showiest of the vines that can be grown in Minnesota. It grows best where it doesn't get too hot. It does well with an exposure to the east but if it is grown on the south and west side of a structure, the clematis will be benefited by midday shade. Clematis does best in a cool, moist soil, but the soil must be well drained. In Minnesota, lime should not be added to the soil. The soil can be kept cool during the growing season by using an organic mulch. Clematis climb by leaf petioles that act like tendrils. Most clematis sold in Minnesota will bloom on the current season's growth if cut to the ground in the spring before growth starts. Some clematis are useful as a ground cover. Zones 3 and 4.

ENGLEMANN IVY

Englemann Ivy (*Parthenocissus quinquefolia* 'Englemannii') climbs with adhesive disks at the end of the tendrils. It has a compound leaf made up of five leaflets similar to the woodbine, but the leaflets are smaller. It takes on a bright red fall color. Zones 3 and 4.



Clematis

HONEYSUCKLE

Vine Honeysuckles (*Lonicera* spp.) are not commonly used landscape plants in Minnesota because there are few that are hardy. There are species of vine honeysuckle that become weedy because of their vigor. Fortunately these are hardy in Minnesota.

Dropmore Honeysuckle (*Lonicera x brownii* 'Dropmore Scarlet Trumpet') blooms from early in the growing season into the fall. The abundant showy flowers are an attractive red-orange color. The foliage is a rich green. This vine climbs by twining and will grow 10-15 feet if support is provided. Zones 3 and 4.

TRUMPET CREEPER

Trumpet Creeper (*Campsis radicans*) climbs by aerial roots. Although not considered dependably hardy, it is sometimes seen in southern Minnesota. It grows best in a sunny location on fertile soils. The large trumpet-shaped flowers are yellowish orange to scarlet in color and appear in July. This vine needs a sturdy support. Dieback is common after a severe winter. Trial in the southern part of zone 4.

VIRGINIA CREEPER

Virginia Creeper or Woodbine (*Parthenocissus quinquefolia*) is a common native that climbs in trees. It has tendrils that end in disks. The foliage turns a bright red in the fall. The small berry clusters turn blue in the fall. Zones 3 and 4.

WISTERIA

Wisteria (*Wisteria sinensis* and *W. chinensis*) is not normally considered hardy in Minnesota; however, it is occasionally grown here in protected locations. Some gardeners lay the vines down to protect them over winter, but some wisterias survive the winter without protection. This vine produces long clusters of violet-purple flowers. It is a vigorous twining vine that will grow 65 feet tall. Trial in the southern part of zone 4 on protected sites.

WOODBINE

(see VIRGINIA CREEPER)

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