



Plant Selection for Water Conservation

Written by Susan S. Barton, Extension Specialist III

October 2024

Plant selection is one of the most important factors in designing a successful drought-tolerant landscape. Along with concern about plant size, texture, color and so on, we must be concerned about how a plant will perform from an ecological and horticultural standpoint. Gardens that thrive for many years are those that are horticulturally sound.

By choosing native plants or plants native to similar climatic zones, you ensure that plants will be adapted to the climate in general. Next look at specific sites. Choose moisture-loving plants for wet, poorly drained sites and drought-tolerant plants for hotter or sunnier areas.

Shade Trees

Because shade trees require 25 to 30 years to mature, homeowners should plant them before any other vegetation. A shade tree planted to intercept the hot afternoon southwest sun will provide cooling in the summer and reduce the water needs of understory plants. The following trees are the most drought-tolerant:

Acer buergeranum, Trident Maple, 20 to 25 feet; full sun. Assets: Rounded outline, glossy dark green leaves in summer turning to yellow, orange and red in fall. ID: Three-lobed leaves are three nerved at base. Triangular lobes are irregularly serrate. Use: Very handsome small patio, lawn or street tree: might work well in planter boxes.

Carya ovata, Shagbark Hickory, 60 to 80 feet; full sun. Assets: Straight, cylindrical trunk with an oblong crown or ascending and descending branches. Bark has a shaggy character. ID: Pinnately compound, yellow-green leaves. Use: Trees for large areas. This tree has a remarkably deep taproot.

Celtis occidentalis, Common Hackberry, 40 to 60 feet; full sun. Assets: Ascending-arching branches, often with drooping branchlets. ID: Dull green leaves

with serrate margins and oblique base. Use: Good for park and large area use. Susceptible to several disease and insect problems.

Fraxinus pennsylvanica, Green Ash, 50 to 60 feet; full sun. Assets: Shiny medium to dark green leaves turning yellow in fall. ID: Pinnately compound, 5 to 9 lanceolate leaflets, pubescent beneath. Use: Used for street, lawn, golf course and park trees; possibly overused.

Ginkgo biloba, Maidenhair Tree, 50 to 80 feet; full sun. Assets: Interesting, fan-shaped leaves with brilliant yellow fall color. ID: Bright green fan-shaped, dichotomously veined leaves. Use: Excellent city tree. Plant only males, as females produce malodorous fruit after approximately 20 years. One of the most primitive trees growing on earth.



Ginkgo biloba, Maidenhair Tree

Gleditsia tricanthos var. inermis, Thornless Honeylocust, 30 to 70 feet; full sun. Assets: Delicate and sophisticated silhouette casting a light shade. ID: Pinnately or bipinnately compound leaves with the petiole base swollen around a bud. Use: Excellent lawn tree for filtered shade but overused.

Gymnocladus dioicus, Kentucky Coffeetree, 60 to 70 feet; full sun. Assets: Bold winter habit, unique and interesting bark pattern. ID: Bipinnately compound leaves with ovate, dark green leaflets. Use: A choice tree for parks, golf courses and other large areas.

Quercus coccinea, Scarlet Oak, 70 to 75 feet; full sun. Assets: Glossy, dark green foliage changing to scarlet in fall. ID: Large leaves with "C"-shaped lobes. Tufts of hair in vein axils. Use: Lawn, park and golf course tree.

Sophora japonica, Japanese Pagodatree, 50 to 75 feet. Assets: Broadly rounded crown with compound leaves that cast a light shade. Covered with creamy white flowers in July through mid-August. ID: Pinnately compound, lustrous green leaves. Flowers are 6 to 12 inch terminal clusters. Use: Last of the large ornamental trees to flower in the summer.

Zelkova serrata, Japanese Zelkova, 50 to 80 feet. Assets: Vase-shaped tree with dark green leaves and interesting bark. ID: Sharply serrate, ovate leaves. Bark is reddish-brown and heavily lenticelled; in old age, often exfoliates. Use: Very handsome tree, well-suited to lawns, streets, parks and large areas.

Small Trees

Many small trees are understory trees that provide an excellent transition planting between natural and more refined areas of a property. Small trees used as specimen trees should have many seasons of beauty, such as flower display, foliage effects, fall color, fruit and bark or habit interest.

Acer ginnala, Amur Maple, 15 to 18 feet; full sun to light shade. Assets: Small tree of rounded outline with lustrous, dark green leaves. ID: Leaves are doubly-serrate and 3-lobed with the middle lobe much longer than the lateral lobes. Use: Small specimen, patio, screen, grouping and massing tree.

Crataegus phaenopyrum, Washington Hawthorn, 25 to 30 feet. Assets: A broadly oval tree with reddish-purple new foliage that changes to lustrous dark green, orange to scarlet fall foliage, white flower clusters and glossy red fruit. ID: Small, sharply serrate, 3 to 5-lobed leaves. Use: Excellent single specimen tree or screen.

Syringa reticulata, Japanese Tree Lilac, 20 to 30 feet; full sun and requires well-limed soil. Assets: White, fragrant flowers in large terminal clusters are extremely showy. Dark green leaves and cherry-like, reddish-brown bark with horizontal lenticels. Use:

Excellent trouble-free lilac makes a good specimen or street tree.



Syringa reticulata, Japanese Tree Lilac

Viburnum prunifolium, Blackhaw Viburnum, 12 to 15 feet; sun or shade. Assets: Round-headed small tree with creamy, flat-topped flowers and bluish-black fruit. ID: Dark green leaves with a stiffly branched growth habit. Use: Interesting as a small specimen tree or in groups.

Evergreen Trees

Evergreens improve our environment by filtering out air pollutants and road dust. In addition, they retard water runoff, screen out unsightly views and serve as windbreaks. Evergreen trees must be placed in locations appropriate for their size and form.

Abies concolor, White Fir, 30 to 50 feet; full sun but tolerates light shade. Assets: Conical tree, branched to the base with bluish or greyish-green needles. ID: Flattened needles curve outwards and upwards. Use: Specimen tree with a softer effect than spruce. This tolerant tree holds needles longer than any other fir.

Juniperus virginiana, Eastern Red Cedar, 40 to 50 feet; full sun. Assets: The habit is pyramidal when young and slightly pendulous in old age. Handsome, reddish-brown exfoliating bark. Many cultivars are available with interesting habits and foliage colors. ID: Scale-like leaves overlap and bruised needles smell like a cedar chest. Use: Cultivars can be used as specimens, windbreaks, shelter belts and hedges.

Picea pungens, Colorado Spruce, 30 to 60 feet; full sun. Assets: The tree forms a regular, narrow pyramid with stiff horizontal branches. Cultivars have blue foliage. ID: Stiff, very prickly needles surround the

stem. Use: Popular as a specimen but it is difficult to combine well with other plants. Dwarf cultivars are available.

Pinus nigra, Austrian Pine, 50 to 60 feet. Assets: Lustrous, dark green needles and attractive bark with grey or grey-brown mottled ridges. ID: Densely pyramidal habit in youth, with two stiff needles in a bundle. Use: A very hardy tree that makes a good specimen, screen, windbreak or mass planting.

Pinus strobus, White Pine, 50 to 80 feet; tolerates some shade. Assets: A graceful tree with a soft pyramidal habit and bluish needles. ID: Slender needles in bunches of fives. Use: A handsome and ornamental specimen, valuable for parks, estates and small properties. Also makes a beautiful hedge.

Pinus sylvestris, Scotch Pine, 30 to 60 feet; full sun. Assets: A picturesque habit develops with age. Bark on the upper trunk is orangish or orangish-brown. ID: Needles are in pairs, stiff and twisted with a blue-green color. Use: Useful as a distorted specimen or in masses.

Shrubs

Shrubs are used in the landscape to provide a transition between tall vertical trees and the horizontal plane of the ground. Shrubs are chosen for habit, foliage, flower or fruit attributes. The most useful shrubs have more than one season of interest. If bright blossoms are the only attribute, the plant should be tucked away so it doesn't detract from the landscape once the flowers are gone. Many of the traditional spring-blooming flowering shrubs, such as forsythia, spirea, lilac and weigelia are somewhat drought-tolerant.

One flowering shrub that is not drought-tolerant, doublefile viburnum (*Viburnum plicatum tomentosum*), can be a very useful indicator plant, for it wilts badly under drought stress. When this plant begins to wilt, it is time to water your sensitive plants. The following shrubs are considered drought-tolerant.

Aronia arbutifolia, Red Chokeberry, 6 to 10 feet; full sun or half shade. Assets: Bright red fruits are born in great abundance along the stems. ID: Upright

multistemmed shrub with even, black-tipped teeth along the leaf margins. Use: Best in masses.

Chaenomeles speciosa, Common

Floweringquince, 6 to 10 feet; full sun or partial shade. Assets: Flowers which range in color from orange through scarlet to white. ID: Leaves have large conspicuous stipules at the petiole base. Use: Effective as a hedge or in a shrub border but has a very short period of interest.

Cornus racemosa, Grey Dogwood, 10 to 15 feet; full shade or sun. Assets: Multistemmed shrub that forms a thicket. Grey older wood and light, reddish-brown younger stems complement each other well. Pinkish-red inflorescences are effective into December. ID: Leaves with typical dogwood venation and a dull grey-green color. Use: Best naturalized in masses and used for its winter character.

Elaeagnus pungens, Thorny Elaeagnus, 10 to 15 feet, sun or shade. Assets: Fragrant, small white flowers and somewhat evergreen leaves flecked with silver. ID: Leaves have ruffled margins, and the undersides are covered with silver scales. Use: Good for banks, hedges, screens and natural barriers. Must be pruned to attain a desirable habit.

Myrica pensylvanica, Northern Bayberry, 5 to 12 feet; full sun to half shade. Assets: Semi-evergreen leaves are aromatic when bruised. Greyish-white berries cover the stems of female plants from September to the following April. ID: Obovate leaves have a leathery texture. Use: Excellent in masses or as part of a border; good salt tolerance.

Pinus mugo var. mugo, Mugo Pine, less than 8 feet tall; sun or partial shade. Assets: Prostrate evergreen shrub with medium green needles. ID: Rigid needles in bundles of two. Use: A low evergreen shrub for foundations, masses or groupings.

Potentilla fruticosa, Bush Cinquefoil, 1 to 4 feet; full sun to partial shade. Assets: Dainty clean foliage and yellow flowers that bloom from June through frost. ID: Pinnately compound leaves are dark green and somewhat silky. Use: Good plant for the shrub border, massing, edging or as a facer plant in a foundation. Adds color to the landscape and many cultivars are available (some with white flowers).

Pyracantha coccinea, Scarlet Firethorn, 6 to 18 feet; full sun to partial shade. Assets: Semi-evergreen shrub with flowers that shroud the plant in white. Orange-red fruit can be spectacular. ID: Pyracantha have stiff thorny branches with spines along the stems. Use: Makes a good informal hedge, barrier plant or espalier.

Rhus typhina, Staghorn Sumac, 15 to 25 feet, half to three-quarters shade or full sun. Assets: Nice leaf texture and spectacular yellow, orange and scarlet fall color. ID: Pinnately compound leaves have 13 to 27 leaflets. Stems are densely covered with velvety hair. Use: Naturalize or use in masses. Can be invasive as it suckers freely from the roots.

Viburnum lentago, Nannyberry Viburnum, 15 to 18 feet; sun or shade. Assets: Creamy yellow flowers and a bluish-black fruit are borne on this large shrub with slender arching branches. ID: Dark green, finely toothed leaves have winged petioles. Use: Ideal shrub for naturalizing; works well as a background or screen plant.

Vitex agnus-castus, Chastetree, 8 to 10 feet; full sun. Assets: Flowers are lilac, fragrant and occur from June through September. ID: Palmate leaves are greyish-green. Use: Interesting foliage texture and late-season flowers make a good addition to the shrub border.

Yucca filamentosa, Adam's-needle Yucca, foliage - 2 to 3 feet, flowers - 3 to 6 feet; full sun. Assets: Dramatic foliage and showy white flower stalks. ID: Sword-like leaves have thread-like filaments that curl from the margins. Use: Best used in a mass for dramatic effect.

Groundcovers

The use of any groundcover will help to stabilize the soil, reduce weeds and conserve water. Most groundcovers are less water demanding than turf. The following are groundcovers that are particularly drought-tolerant.

Arctostaphylos uva-ursi, Bearberry, 6 to 12 inches; full sun to part shade. Assets: Low-growing, glossy leaved, evergreen groundcover with leaves that turn reddish in the fall. Small, white, urn-shaped flowers appear in late April to May. Bright red fruit is effective

from late July through August. ID: Small obovate leaves. Use: One of the prettiest, sturdiest and most reliable groundcovers.

Cerastium tomentosum, Snow-in-Summer, 6 inches; full sun. Assets: White flowers cover the silver leaves in May and June. ID: Small linear leaves of this mat-forming herbaceous perennial are covered with white woolly hair. Use: Groundcover or edging plant.

Cotoneaster dammeri, Bearberry Cotoneaster, 1 to 1 1/2 feet. Assets: Dark green foliage is semi-evergreen. Red berries are sparsely produced. ID: Low, prostrate shrub with small leaves. Use: Excellent groundcover for banks, gentle slopes, masses, shrub borders or foundations.

Hemerocallis cultivars Daylily, 1 1/2 to 4 feet; full sun or partial shade. Assets: Trumpet-shaped flowers can be found in almost any color of the rainbow. ID: Long linear leaves appear in clumps and tall flowering stems extend from the center. Use: When used in masses, daylilies make a good herbaceous groundcover.

Hypericum calycinum, Aaronsbeard St.

Johnswort, 1 to 1 1/2 feet; full sun to partial shade. Assets: Bright yellow flowers bloom from June through September. ID: This semi-evergreen shrub has ascending stems with dark green leaves. Use: Hypericum makes a good groundcover because it grows quickly and effectively covers an area in a short amount of time. Mow to the ground to induce new growth each spring.

Juniperus horizontalis, Creeping Juniper, 1 to 2 feet; full sun. Assets: Low-growing shrub that forms a large mat. Foliage may be steel-blue turning plum purple in winter. ID: Most of the leaves are scale-like. Use: This extremely tolerant groundcover has many cultivars with varying habits and foliage colors.

Sedum sp., Stonecrop, 2 inches to 2 feet; full sun. Assets: Succulent green leaves and small yellow, white or pink flowers that are borne in showy flower clusters. ID: Fleshy leaves with shapes that vary between species. Use: Most sedums are mat-forming groundcovers. A number of different species are available.

Santolina chamaecyparissus, Lavender Cotton, 1 1/2 to 2 feet; full sun. Assets: This broad spreading

herbaceous perennial has silver-grey, fine-textured foliage and button-like yellow flowers. ID: The pubescent leaves are pinnately divided into very small segments. Use: Santolina can be used in the rock garden, as a low hedge or as a groundcover.

Thymus serpyllum, Creeping Thyme, 3 to 6 inches tall; full sun. Assets: This mat-forming herbaceous perennial has greyish-green leaves and small, fragrant, purple flowers. ID: The small leaves have a strong mint-like odor. Use: Thyme makes an excellent groundcover around walks where the aroma is released when it is inadvertently crushed.

Credits

EPA, DNREC, New Castle-Kent-Sussex Conservation Districts, Delaware Nature Society, Delaware Cooperative Extension, University of Delaware.

This information is brought to you by the University of Delaware Cooperative Extension, a service of the UD College of Agriculture and Natural Resources — a land-grant institution. This institution is an equal opportunity provider.