

## **Plant and Site Considerations for Choosing Trees, Shrubs**

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### **PART II Site Considerations\***

The conditions of the planting site are as important as choosing the proper plant. Soil type and drainage, available water and sunlight, exposure to drying winds and other factors must be considered. Attempting to match the requirements of the plant to the site increases the survivability, performance, and longevity of the plant selected.

**The first step in assessing** the condition of the planting site is to examine the soil. Is it sandy and well drained? Is it moist with some organic material? Is it heavy clay and, therefore, wet and perhaps compacted? Construction practices such as cutting and filling, installation of underground utilities, and backfilling against foundations can create great diversity in soil structure. This variability can change drastically with depth and between planting locations on the same property.

Because plant roots require both moisture and oxygen for growth, soil drainage should be checked before planting. A poorly drained soil, high in moisture, but low in oxygen, prevents both proper root development and growth of beneficial soil micro-organisms that are responsible for decomposing organic matter and releasing plant nutrients.

**To test for soil drainage**, dig a hole 18 inches deep, fill it with water and let it stand overnight. If the water has not drained by morning, there is a drainage problem. (Do not test the drainage in this manner after heavy rainfall or before the ground has thawed in the spring.)

Soil pH is a measure of the acidity or alkalinity of a soil. A pH below 7 (neutral) would indicate an acid soil, and a pH above 7 indicates an alkaline soil. Many plants have an optimal range of pH; some are acid loving, and some may do best when the pH is near 7. Most trees thrive on a pH between 6.0 and 7.0. Soil

pH is raised by calcium carbonate or lime. Plant species that will tolerate a high pH should be considered for areas with buried concrete, near foundations, or sidewalks, etc. Plant species considered tolerant of high pH include: green ash, white ash, amur corktree, ginkgo, hackberry, honeylocust, and Russian olive. Evergreens perform best in slightly acidic conditions. There are some exceptions: arborvitae, ponderosa pine, Colorado blue spruce, Black Hills spruce, muhgo pine, and junipers can tolerate a wider pH range.

#### **Water**

The correct amount of water for plants is essential. Select plants that are tolerant of excess water for low areas where water may be standing or very close to the surface, or where a heavy clay soil exists. Standing water or a high table means low oxygen content in the soil. Therefore, trees and shrubs that can tolerate excessive moisture are often better suited to these poor sites. Trees that are able to tolerate moisture are: green ash, river birch, hackberry, swamp white oak, red maple, and Russian Olive. Drought tolerant trees can withstand extended periods with little water and are best suited for sandy soils. They include: green ash, amur corktree, ginkgo, hackberry, Kentucky coffeetree, and Russian olive. Drought tolerant shrubs include amur maple, barberry, caragana, honeysuckle, buffaloberry, spirea, and lilac.

#### **Sunlight**

Although some plants can tolerate low light conditions, most require full sun to maintain their vigor and attain their optimum performance. Deciduous trees considered to be more shade tolerant include: green ash, white ash, river birch, ironwood, Kentucky coffeetree, American linden, Norway maple, hackberry, red maple, and sugar maple. Evergreen plant materials tolerant of shade include Canada Hemlock and yews. Evergreens

tolerating a filtered shade situation include arborvitae, Balsam fir and Douglas fir.

#### **Location**

The location of the planting site in relation to other trees and objects such as buildings, fences, etc. will have a considerable influence on temperature and moisture conditions. Prevailing westerly winds will have a drying effect on non-protected sites. The south side of a building will be much warmer and drier than the north side. The warming effect of the sun on a cold winter day can cause injury to bark and may cause the tree trunk to split. For evergreens, this warming can cause water loss and growth activity resulting in needle damage when the temperature is again lowered. Plant hardiness can be greatly affected by the amount of protection provided by individual microclimates.

\*Adapted from Minnesota Extension Service publication (AG-FO-3825) "Planting and Transplanting Trees and Shrubs" by Bert T. Swanson, James B. Calkins, Peter-Jon Rudquist and Steven Shimek.

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