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Maples in the Landscape

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Introduction

Maple trees (*Acer sp.*) are a common fixture and beautiful addition to Utah landscapes. There are over one hundred species, each with numerous cultivars (cultivated varieties) that are native to both North America and much of Northern Europe. Trees vary in size and shape, from small, almost prostrate forms like certain Japanese maples (*Acer palmatum*) and shrubby bigtooth maples (*Acer grandidentatum*) to large and stately shade trees like the Norway maple (*Acer platanoides*). Tree shape can vary greatly, ranging from upright, columnar, rounded, pyramidal to spreading. Because trees come in a range of shapes and sizes, there is almost always a spot in a landscape that can be enhanced by the addition of a maple. Maples can create a focal point and ornamental interest in the landscape, providing interesting textures and colors, and of course, shade. Fall colors typically range from yellow to bright red, adding a burst of color to the landscape late in the season.

Recommended Cultivars

There are many factors to consider when selecting a maple for your landscape, including tree size, leaf color, fall foliage color, leaf shape, and disease resistance. Soil chemistry and characteristics are important considerations when choosing maple trees. In Utah, high pH is common and may cause some micronutrients, particularly iron, to be less available, making it difficult for certain trees to take up needed nutrients. A common problem associated with maples in the Intermountain West is iron chlorosis (Figure 1). This nutrient deficiency causes yellowing leaves (chlorosis) with green veins, and in extreme conditions, can cause death of leaf edges. If left untreated, branch death or even tree death can occur. When selecting a tree for your landscape, choose a cultivar that is well adapted to your soil and conditions.

Figure 1. *Severe iron chlorosis on maple. Note the interveinal chlorosis characterized by the yellow leaves and green veins. Spotting on the leaves is indicative of the beginning of tissue necrosis from a chronic lack of iron.*

There are several parent species from which maple hybrids and cultivars are derived. Understanding these species' general characteristics will help you determine if a cultivar may be a good fit for your landscape. For specific cultivar recommendations, see Table 1.

***Norway maple* (*Acer platanoides*):** This group of maples is well adapted to the Intermountain West and is typically tolerant of alkaline soil and arid climate. Norway maple is probably the most commonly planted maple in the Intermountain West. They are considered somewhat shallow-rooted, and roots may interfere with sidewalks and other landscape plants. The papery, "helicopter" seeds (samaras) of Norway maples may become weedy in certain situations (Figure 2).

Figure 2. *Samaras are common on many maples. Samaras on Tatarian maples often turn bright red.*

***Silver maple* (*Acer saccarinum*):** These trees are known for rapid growth and the ability to provide ample shade due to their large size. Silver maples have brittle wood that can break easily in gusty winds, and they are extremely prone to iron chlorosis in Utah. Many of the silver maple cultivars also produce copious samaras that can be messy and difficult to control after germination.

***Red maple* (*Acer rubrum*):** These trees are medium-sized and can be prone to breakage with wind or snow load if narrow branch angles are present. Like the silver maple, red maples often struggle in high pH soil, showing symptoms of iron chlorosis and sometimes manganese deficiency, making them less suited to the Intermountain West. Unlike other maples, red maple is fairly tolerant of wet soil. In the Midwest and the eastern United States, red maples are sought after for their beautiful red fall foliage.

***Sugar maple (Acer saccharum*):** Sugar maples are native to most of the northeastern United States. Trees are used to collect sap which is boiled down into maple syrup. These trees have excellent canopy form and beautiful fall colors. However, because of their aversion to high pH soils, sugar maples are typically not recommended in the Intermountain West.

***Shantung maple* (*Acer truncatum*):** The Shantung maple is a medium-sized tree that works well in the parkway and is often selected as a shade tree. It is adaptable and able to tolerate drought, clay soil, and alkaline soil. This tree has been hybridized with Norway maple to produce the 'Sunset' maple series, which are excellent selections for Utah.

Figure 3. *Tatarian maples have unique leaves.*

***Tatarian maple* (*Acer tataricum*):** Tatarian maples are small, upright trees (15 to 20 feet tall) that tolerate a wide array of soil conditions and drought. Tatarian maples have unique, unlobed leaves

(Figure 3). The brightly colored samaras turn red and are a focal point in mid-summer as they mature.

***Amur maple* (*Acer ginnala*):** The amur maple can be used in the landscape as a small tree or large shrub. It is often multi-stemmed and has a rounded form. It is very cold tolerant and does best in well-draining soil. Like the silver and red maples, amur maples often struggle in high pH soil, showing symptoms of iron chlorosis and sometimes manganese deficiency. Fruit on some cultivars can be bright red, adding late spring or summer interest. Fall leaf color can vary from gold to red.

***Boxelder maple* (*Acer negundo*):** The boxelder maple is common to many landscapes due to its ability to thrive in the high temperatures and drought conditions common to the Intermountain West. These trees can have brittle, weak wood that is easily broken in stormy weather. The common boxelder is typically considered weedy and is known to attract box elder bugs, a type of seed bug that feeds on the developing seeds in the tree. Most boxelder trees could be considered undesirable; however, because 'Sensation' is a male clone, it is seedless, reducing insects' attraction to the tree. This cultivar also boasts a beautiful form, interesting spring flowers, and orange, pink, and red foliage in the fall and is highly attractive in the landscape.

***Hedge maple* (*Acer campestre*):** These trees derive their name from a common practice of shearing them into a hedgerow in European countries. These trees perform well in high pH soils and are tolerant of dry, compacted soils and air pollution. Though slow growing, these trees are an excellent selection for the Intermountain West.

***Miyabe maple* (*Acer miyabei*):** Not commonly grown, these medium to large trees have an upright to rounded habit with a dense canopy. This tree is adaptable to many soil types and can tolerate short periods of drought. The leaves stay dark green late into the fall months (Figure 4). The attractive bark is rough, corky, and deeply furrowed.

***Sycamore maple* (*Acer pseudoplatanus)*:** The sycamore maple is large, stately shade tree that tolerates a wide range of soil conditions and drought. The underside of each dark green, leathery leaf has a dull green, sometimes purple, tinge of color.

Figure 4. *Miyabe maple (Acer miyabei) adapts to many soil types and has leaves that stay green late into the fall.*

***Japanese maple* (*Acer japonicum*):** Japanese maples are a very popular ornamental often used as a focal point in landscapes due to their airy form and uniquely shaped and colored leaves. Though there are dozens of varieties and cultivars, they are generally only hardy to the United States Department of Agriculture (USDA) zone 6 (0 to -10 degrees F). Winterkill is common with Japanese maple, and they should be placed in sheltered microclimates to prevent injury and dieback. Japanese maples also prefer filtered shade; intense sunlight at high elevations can scorch leaves. Plant trees in part-sun/shade to prevent leaf burn.

***Korean maple* (*Acer pseudoseboldianum*):** Korean maples look much like Japanese maples, growing to 15 to 25 feet tall and wide. Korean maples also prefer a filtered shade but are considered to have superior cold hardiness, often to USDA zone 4 (-20 to -25 degrees F).

***Paperbark maple* (*Acer griseum*):** In addition to red fall foliage, the paperbark maple offers interest with the copper-red bark that exfoliates (peels) from the trunk. These slow-growing trees are well adapted to

varied pH and soil types but prefer moist, well-draining soil.

***Rocky Mountain maple* (*Acer glabrum*):** This tree, native to the mountains of the western United States, is commonly found in shady groves near mountain streams. Much like Japanese maples, Rocky Mountain maples prefer filtered shade in the landscape.

***Bigtooth maple* (*Acer grandidentatum*):** The bigtooth maple is a close relative to the eastern sugar maple and boasts vibrant pink, red, and orange fall foliage. It is native to the Rocky Mountains (Figure 5). The tree derives its name from its deeply lobed or toothed leaves. These trees are well adapted to a dry climate and soil and are an excellent landscape selection. Trees grown from seed are widely available but fall color can vary due to genetics. Two of the most common cultivars of bigtooth maple available from nurseries are typically grafted onto sugar maple rootstock ('Rocky Mountain Glow' and 'Mesa Glow'). Even though they are bigtooth maples, these selections may struggle with iron chlorosis in high pH soils due to the rootstock.

Figure 5. *Bigtooth maple (Acer grandidentatum) has deeply lobed leaves that become a vibrant red color in the fall.*

HYBRID CULTIVARS

Hybridization has been used in the nursery industry to produce trees with desirable characteristics, such as appropriate size and shape in addition to brilliant fall color. When selecting a hybrid cultivar, it is important to know the parentage to assess potential problems. For example, the 'Autumn Blaze' maple is a popular hybrid cross between red and silver maple. This hybrid is highly susceptible to iron chlorosis. In contrast, other maple hybrids (such as crosses between Norway and Shantung maples, including 'Norwegian Sunset,' 'Ruby Sunset,' 'Urban Sunset,' and 'Pacific Sunset') demonstrate better adaptability to the soils of the Intermountain West and are not as prone to iron chlorosis as the red and silver maple crosses.

How to Grow

SITE SELECTION

Maples grow best in full sun, with the exception of Japanese, Korean, and Rocky Mountain maples, which should be placed in a sheltered part-sun/shade location. Many of these trees are large, and mature tree size should be taken into consideration when planting. In general, plant larger trees away from structures and where roots will not damage underground lines or foundations. Smaller trees, such as Japanese maple or bigtooth maple can be planted closer to structures with careful consideration. Most maples prefer loamy, well-draining soil, though a few varieties such as the paperbark maple and Tatarian maple will adapt to clay-based soil. A soil test before planting may be beneficial to determine your soil texture, pH, salinity, organic matter, and nutrient content. For more information on soil testing, visit the Utah State University (USU) Analytical Laboratory.

SITE PREPARATION

Taking time to properly prepare the planting site is important as the tree will occupy the site for many years. Controlling perennial weeds, such as field bindweed, before planting is easier than attempting to control weeds after planting.

PLANTING AND SPACING

Trees should be planted in the early spring or fall when temperatures are mild. If trees are planted in the summer months, give careful attention to irrigation to minimize tree stress. Dig planting holes

two or three times wider than the width of the ball (Figure 6). Place the tree gently in the hole to avoid disturbing the roots and trunk. The planting depth should place the tree so that the flare of the root collar is exposed and planted at or above ground level. Trees planted too deep may struggle to survive because of reduced oxygen in the root zone. These trees may also produce suckers at the base more readily. Once the tree is at the right depth, backfill the hole with soil and immediately water the tree.

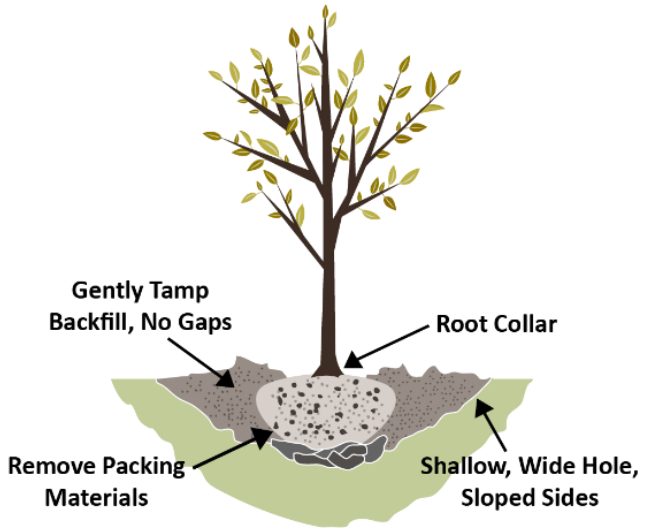

Figure 6. *Planting trees at proper depths in the landscape is important to maintain tree health.* Graphic design by Olivia Yeip and USU Extension Forestry.

IRRIGATION

Water newly planted trees regularly to support root growth and to support the canopy of leaves. Water should be applied so that the soil is wet to a 12-inch depth while trees are establishing. Watering frequency may need to be adjusted based on the soil texture. Sandy and loamy soils may require water every two to four days, where heavy clay soils need to be watered less frequently. Maples require a moderate amount of water once established (1.5 to 2.0 inches of water every other week once trees have established an adequate root system, which can take up to three years depending on tree size). Planting maples in the turf can lead to problems associated with excessive water such as root rot, iron chlorosis, and other diseases.

WEED CONTROL

Weeds and turf under the canopy of the tree can compete with the tree for water and nutrients. String trimmers and lawn mowers used around the trunk of the tree can also increase incidence of physical damage to the tree. Remove turf 2 to 4 feet from the trunk circumferentially to eliminate this problem. Avoid tilling under canopies as a method of weed control. This can damage roots near the soil surface, increasing the incidence of soilborne pathogens, and bring weed seeds to the surface where they can more readily germinate. Apply a thin layer (1 to 2 inches) of mulch around the base of the tree to suppress weed growth. Other methods of weed control include hand pulling, hoeing, or shallow hand cultivation. Keep in mind some chemical herbicides, such as dicamba, have soil activity and can damage the roots of woody plants. Apply herbicides cautiously and take care to ensure the chemical is not applied to the trunk or any associated suckers. Make sure to always read the label instructions before using any chemical weed control.

FERTILIZATION

Trees do not typically need additions of fertilizers. If trees appear to be struggling, leaves are small, and growth is less than 5 inches per year, conduct a soil test to determine if additional nutrition is needed.

PRUNING

Maples usually require minimal pruning after the general structure has been established during the early years of the tree's life. Prune in the early spring when trees are dormant to make visualization of the canopy easier. Remove dead, diseased, or crossing branches from the canopy.

PESTS AND DISEASE

Verticillium wilt is a soilborne fungus that enters into the root system and essentially clogs the water conducting tissues, causing leaf browning and eventual branch dieback. Nearly all maple trees are susceptible to verticillium wilt, though it is true that planting in well-draining soil or a raised berm or hill

will promote water drainage and reduce infection risk. There is no known remedy for this pathogen; in soils with a history of verticillium wilt, it is recommended to plant other tree species.

Powdery mildew is a common fungal disease in many landscape plants. Powdery mildew derives its name from its dusty, white appearance on the surface of the plant's leaves. Varieties of maples with purple leaves are especially susceptible to powdery mildew. Infection risk can be greatly reduced by avoiding wetting the canopy when irrigating. Pruning to open the canopy and promote airflow can also reduce infection.

Anthracnose is another fungal leaf disease that can affect certain tree species, including maples, during cool, wet springs. Anthracnose causes brown, water-soaked lesions along the veins of the leaves (Figure 7).

Figure 7. *Anthracnose is a fungal disease that affects the leaves with the formation of brown, water-soaked lesions.*

Iron chlorosis is the most common problem that affects maples in the Intermountain West due to high pH soils. Iron chlorosis can be exacerbated by compacted soils, extended cool and wet spring weather, or irrigation management practices that contribute to soil saturation and drainage issues within the soil profile. Proper water application and practices that alleviate soil compaction and the addition of drainage systems can alleviate soil saturation.

Several methods are available for treating iron deficiency. Foliar application of iron can provide almost immediate visual results but is a short-term solution. Foliage that emerges after application will be chlorotic and additional applications may be required.

Addition of a chelated iron product (FeEDDHA) as a soil drench is relatively simple and often provides a season-long solution. Apply chelated iron products in the spring when leaves begin to emerge. Additional applications may be necessary in the fall if symptoms of iron chlorosis persist. Soil applications need to be repeated annually on susceptible trees and can become costly.

Trunk injection or implantation of ferric ammonium citrate can be effective and longer-lasting than soil application but adds a component of physical damage to the tree trunk. Recent research has shown application through trunk injection is more effective when holes are drilled in the root flares near the soil surface (Kansas State University, 2016).

In short, it is strongly recommended to plant a cultivar that tolerates alkaline soil and will provide you with a healthy tree that does not require use of these iron fertilizers. For more detailed information on treating iron chlorosis, see the Control of Iron Chlorosis in Ornamental and Crop Plants fact sheet.

Common insect pests associated with maples include aphids and cottony-cushion scale. These insects, with their piercing-sucking mouthparts, pierce leaves and excrete a sticky substance called honeydew. This sticky residue from feeding can be found on leaf surfaces and the surfaces of vehicles inadvertently parked under trees. There is a wide array of control measures for these insects. Guidelines for control are available from your local USU Extension agent. Additionally, you can sign up for landscape plant pest advisories at the USU Pest Advisories website.

Table 1.
Common Cultivars of Maples Used in Landscapes, Arranged by Parentage

CULTIVAR	CANOPY SHAPE	MATURE HEIGHT	MATURE WIDTH	HARDINESS ZONE	SUMMER LEAF COLOR	AUTUMN LEAF COLOR†	RECOMMENDED
Amur maple							
Flame	Rounded	20’	20’	3	G	O,R	Yes
Ruby Slippers	Rounded	20’	20’	3	G	R	Yes
Bigtooth maple							
Mesa Glow	Oval	28’	18’	4	G	R	Yes
Rocky Mountain Glow	Oval	25’	15’	4	G	O,R	Yes
Boxelder maple							
Sensation	Oval	45’	30’	4	G	R	Yes
Japanese maple							
Atropurpureum	Rounded	8’	8’	5	P,G	O,R	Yes
Bloodgood	Rounded	18’	18’	5	P,G	R	Yes
Crimson Queen	Rounded	10’	12’	5	C	Y,O,R	Yes
Dissectum	Rounded	8’	10’	5	G,C	Y,O,R	Yes
Full Moon	Rounded	20’	25’	5	G	O,Y,R	Yes
Viridis	Rounded	8’	8’	5	G	Y,O,R	Yes
Hedge maple							
Nanum	Shrub	6’	8’	5	G	Y	Yes
Queen Elizabeth	Rounded	35’	30’	6	G	Y	Yes
Streetside	Oval	35’	18’	5	G	Y	Yes
Korean x Japanese hybrid maple							
Northern Glow	Rounded	20’	24’	4	G	O,R	Yes
Miyabe maple							
Rugged Ridge	Oval	55’	40’	4	G	Y	Yes
State Street	Rounded	40’	30’	4	G	Y	Yes
Norway maple							
Crimson King	Rounded	40’	35’	3	C	Y	Yes
Crimson Sentry	Columnar	25’	15’	4	C	Y	Yes
Deborah	Rounded	40’	30’	3	C,G	Y	Yes
Drummond	Oval	40’	25’	4	V	Y	Yes
Emerald Queen	Oval	65’	40’	4	G	Y	Yes
Globosum	Rounded	20’	20’	4	G	Y	Yes
Parkway	Oval	40’	25’	3	G	Y	Yes
Princeton Gold	Oval	40’	25’	4	Y,G	B	Yes

Schwedleri	Oval	60’	50’	3	G,R	Y	Yes
Norway x Shantung hybrid maple							
Norwegian Sunset	Oval	35’	30’	4	G	R	Yes
Pacific Sunset	Oval	35’	25’	4	G	Y,O,R	Yes
Ruby Sunset	Rounded	25’	20’	4	G	R	Yes
Urban Sunset	Oval	35’	20’	5	G	R	Yes
Paperbark maple							
Fireburst	Oval	25’	18’	5	G	R	Yes
Red x Silver hybrid maple							
Armstrong	Columnar	60’	25’	4	G	O,R	No*
Autumn Blaze	Oval	50’	40’	4	G	R	No*
Celebration	Pyramidal	45’	25’	4	G	Y,O,R	No*
Scarlet Sentinel	Oval	40’	20’	4	G	R	No*
Sienna Glen	Oval	50’	40’	3	G	Y	No*
Silver maple							
Elegant	Oval	60’	40’	3	G	Y	No*
Lacinatum	Oval	80’	50’	3	G	Y	No*
Sycamore maple							
Regal Petticoat	Rounded	40’	30’	3	G,P	Y,O,R	Yes
Tatarian maple							
Hot Wings	Rounded	20’	24’	3	G	Y,O,R	Yes
Rugged Charm	Oval	28’	15’	3	G	Y,O,R	Yes

† Color key: R = red, C = crimson, O = orange, Y = yellow, G = green, B = Brown, P = purple, V = variegated
* Susceptible to iron chlorosis

Photo Credit

All in-text photos are by JayDee Gunnell, with the masthead photo provided by Pixabay at https://pixabay.com/photos/autumn-leaves-maple-leaf-the-leaves-4392723/.

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