

Table 1. Understory trees.

Plant name	Shade tolerance	Size	Comments
American hop hobeam, Ironwood, <i>Ostrya virginiana</i>	Light to medium	25-40' tall, 15-30' wide	Best in dry sites. Fruits enclosed in a papery membrane resembling hops. Native.
American hornbeam, Blue beech, Ironwood, <i>Carpinus caroliniana</i>	Light, medium, or full	20-30' tall and wide	Does best in moist sites, but tolerates drier conditions. Can be difficult to transplant. Moderately slow grower. Good yellow to orange-red fall color. Native.
Carolina silverbell, <i>Halesia carolina</i>	Light to medium	30-40' tall, 20-35' wide	Dangling white, bell-shaped flowers in midspring, followed by winged brown fruits in fall. Prefers moist, acidic, well-drained soils.
Flowering dogwood, <i>Cornus florida</i>	Light to medium	20-30' tall and wide	Make certain plant source is from northern, hardy range of dogwood. Showy white or pink bracts in midspring, followed by clusters of red fruits in fall. Needs moist, well-drained soil.
Kousa dogwood, <i>Cornus kousa</i>	Light to medium	20-30' tall and wide	Large white bracts similar to, but 2-3 weeks after, flowering dogwood. Red fruits in late summer to early fall. Reddish-purple fall foliage. Generally good resistance to the dogwood anthracnose fungus.
Ohio buckeye, <i>Aesculus glabra</i>	Light to medium	20-40' tall and wide	Early to leaf out in spring. Prickly fruit covering opens to reveal chestnut brown "buckeyes." Dropping fruits can be messy. Fall color yellow to orange. Susceptible to leaf spot diseases. Leaf scorch common in hot, dry sites.
Pagoda dogwood, <i>Cornus alternifolia</i>	Light to medium	15-25' tall and wide	Interesting layered branching pattern. Creamy white flowers in late spring not as showy as flowering dogwood. Flowers followed by red turning bluish-black fruits in mid- to late summer. Does best with moist, cool soils.
Serviceberry, Juneberry, <i>Amelanchier arborea</i> , <i>A. canadensis</i> , <i>A. laevis</i> , <i>A. x grandiflora</i>	Light to medium	15-25' tall, 10-20' wide	Clusters of white flowers in early spring followed by edible blue berries in late spring to early summer, much appreciated by birds. Does best in moist soils, but tolerates dry sites. Difficult to distinguish species unless in flower or fruit. Yellow to red fall color.
Sourwood, Lily of the Valley Tree <i>Oxydendrum arboreum</i>	Light to medium	25-30' tall, 20' wide	Long showy panicles of white flowers produced in early summer. Flowers best in full sun. Fall foliage color red, yellow and purple. Does best in gravelly soils.

Table 2. Deciduous shrubs.

Plant name	Shade tolerance	Size	Comments
Arrowwood viburnum, <i>Viburnum dentatum</i>	Light to medium	8-12' tall, 6-12' wide	Creamy white flower clusters in late spring, followed by blue-black berries in fall. Fall color varies from yellow to reddish-purple. Adapted to many soil conditions. Suckers freely.
Bottlebrush buckeye, <i>Aesculus parviflora</i>	Light to medium	8-12' tall, 8-15' wide	Showy panicles of white flowers in midsummer. Suckering, multistemmed shrub. Better pest tolerance than other buckeyes.
Burkwood viburnum, <i>Viburnum x burkwoodii</i>	Light to medium	8-10' tall, 6-8' wide	Flowers pink in bud, opening to fragrant white clusters 3" across in early spring. Semi-evergreen foliage. Adapts to most pHs. Prefers moist soil. Many similar hybrids are available in the nursery trade.
Common witchhazel, <i>Hamamelis virginiana</i>	Light, medium to full	20-25' tall, 15-20' wide	Yellow, straplike flowers in late fall, often at the same time as leaves are colored yellow. Best in moist shade.
Highbush cranberry, <i>Viburnum trilobum</i>	Light to medium	8-12' tall and wide	White, 4" clusters of flowers in midspring, followed by bright red fruits in fall, persisting into winter. Fall foliage color ranges from yellow to reddish-purple. 'Compactum' and 'Arnold' are dwarf versions, 3-6' tall.
Japanese kerria, <i>Kerria japonica</i>	Light, medium to full	3-6' tall, 6-9' wide	Spreading, arching plant with yellowish-green stems. Bright yellow flowers in midspring and sporadically through the season. Does best with low fertility and well-drained soils.
Koreanspice viburnum, <i>Viburnum carlesii</i>	Light to medium	4-8' tall and wide	Fragrant pinkish-white flowers in midspring. Dark green summer foliage sometimes turning purple in fall. 'Cayuga' is more disease tolerant.
Large fothergilla, <i>Fothergilla major</i>	Light to medium	6-10' tall, 4-8' wide	White, bottlebrush tufts of flowers in midspring. Fall leaf color is a mix of yellow, orange, and red. Requires acidic soil.
Leatherwood, <i>Dirca palustris</i>	Light, medium to full	3-6' tall and wide	Small yellow flowers in early spring. Yellow-green foliage. Prefers moist shade.
New Jersey tea, <i>Ceanothus americanus</i>	Light to medium	3-4' tall, 3-5' wide	Small white flowers in summer. Tolerates dry sites. Some leaf spot and mildew problems.
Oakleaf hydrangea, <i>Hydrangea quercifolia</i>	Light to medium	4-8' tall, 3-5' wide	White flowers in summer, changing to pink, then brown. Coarse, oak-leaf shaped foliage. Best in moist, well-drained soil.
Redosier dogwood, <i>Cornus sericea</i>	Light to medium	8-12' tall and wide	Noted for dark red bark coloration. Prune out old stems to maintain best color. White flower clusters in late spring and sporadically through the summer. Fall color is sometimes reddish-purple. Compact forms 'Isanti' and 'Kelsey' are susceptible to leaf spots.

Table 2. Deciduous shrubs (continued).

Plant name	Shade tolerance	Size	Comments
Shrubby St. Johnswort, <i>Hypericum prolificum</i>	Light to medium	2-5' tall, 2-4' wide	Bluish-green foliage color. Bright yellow 1" flowers in summer. Seed capsules persist through winter. Well-adapted to dry, heavy soils.
Smooth hydrangea, <i>Hydrangea arborescens</i>	Light, medium to full	3-5' tall and wide	Cultivar 'Annabelle' produces panicles of flowers up to 1' wide in mid- to late summer. Cut back to ground each winter. Suckers and spreads from roots. Does best with moisture.
Sweet pepperbush, <i>Clethra alnifolia</i>	Light, medium or full	3-8' tall and 3-6' wide	Fragrant white to pink flowers in summer. Good for heavy shade and wet sites. Spreads slowly through suckers.
Virginia sweetspire, <i>Itea virginica</i>	Light, medium or full	3-5' tall and wide	Fragrant racemes of white flowers in summer. Deep red fall foliage color. Does best in moist sites.
Winterberry, <i>Ilex verticillata</i>	Light to medium	6-12' tall and wide	A deciduous holly. Separate male and female plants. Bright red berries on females in fall through early winter. Prefers moist, acid soil.

Evergreens. Broad-leaved evergreens generally need protection from winter winds and afternoon sun to prevent browning of leaves. Often, sites on the north or east sides of buildings are best (see Table 3).

Table 3. Evergreens.

Plant name	Shade tolerance	Size	Comments
American holly, <i>Ilex opaca</i>	Light to medium	15-30' tall, 10-20' wide	Native to southeast Missouri. Slow growing. Best treated as a large shrub, although it can become a medium-sized tree. Separate male and female plants. Red berries produced on females if pollinated by male. Needs a protected site in the north.
Canada hemlock, <i>Tsuga canadensis</i>	Light to medium	40-60' tall, 25-30' wide	Easily kept sheared to a height of 3-5' as a hedge. Needs well-drained soil, but doesn't tolerate drought or drying winds. Very cold hardy.
Drooping leucothoe, Fetterbush, <i>Leucothoe fontanesiana</i>	Light, medium or full	3-6' tall and wide	Fragrant white flowers in spring. Species has green to bronzy foliage. Some selections have been made for white to pink variegation in foliage color. Fall color is purplish-red. Does best in moist, acid, protected sites. Best in the southern half of Missouri. Leaf spot can be serious.
Japanese holly, <i>Ilex crenata</i>	Light to medium	5-10' tall and wide	Much variability in size and hardiness of cultivars. Some take many years to reach 3' in height. Best adapted to the southern half of the state. Finer texture than American holly. Nonshowy, black fruits are produced on female plants.
Japanese pieris, <i>Pieris japonica</i>	Light to medium	5' tall and wide	Panicles of white, pink or red flowers in springtime. Flower buds are formed the previous summer, and are attractive through the winter. Foliage is deep green, sometimes emerging red as in the cultivar 'Mountain Fire.' Best in the southern half of the state.
Leatherleaf viburnum, <i>Viburnum rhytidophyllum</i>	Light to medium	10-15' tall and wide	Upper leaf surface is leathery green, underside is grayish brown. Semi-evergreen. May suffer some dieback in severe winters, but will resprout from base. White flower clusters in midspring, followed by red fruits turning black in fall.
Littleleaf boxwood, <i>Buxus microphylla</i>	Light	3-4' tall and wide	Var. <i>koreana</i> is extremely hardy, but yellows during winter. 'Wintergreen' maintains better green color through winter. Shallow-rooted plants do best with mulching to keep roots cool and moist. Common boxwood, <i>B. sempervirens</i> , is best suited to southeast Missouri.
Oregon grapeholly, <i>Mahonia aquifolium</i>	Light to medium	3-5' tall and wide	Bright yellow clusters of flowers in spring followed by blue-black berries that hang on into winter. Foliage resembles holly. Unfolds reddish-bronze, turning medium green in summer. Semi-evergreen through winter.
Rhododendron, <i>Rhododendron sp.</i>	Light to medium	Variable	Many species and hybrids of azaleas and rhododendrons are available. All do best in light shade with acidic, well-drained soils. Some are deciduous, and some are evergreen. 'P.J.M.' and 'Nova Zembla' are two of the hardest evergreen types. See MU publication G 6825, <i>Growing Azaleas and Rhododendrons</i> , for more details.
Spreading euonymus, <i>Euonymus klautschovicus</i>	Light to medium	4-8' tall and wide	Glossy semi-evergreen foliage. 'Manhattan' and 'Paulii' are most common varieties.
Yew, <i>Taxus x media</i>	Light, medium or full	Variable	As a hybrid of two other species, plants vary from upright to spreading forms. 'Hicks' is a common upright cultivar. 'Taunton' is a spreading form only 3-4' tall which shows good resistance to winter burn and good heat tolerance. Needs well-drained soil. Female clones may produce red fruits.

Ground covers and vines

Since few turf grasses are well adapted to shady conditions, ground covers are often an excellent alternative to turf in the shade (see Table 4). Rather than struggling to keep grass alive in these problem areas,

choose from among the following ground covers that do best with some protection from full sun. Some may be used either as a ground cover or a shade-tolerant vine.

Table 4. Ground covers and vines.

Plant name	Shade tolerance	Size	Comments
Ajuga, Carpetweed, Bugleweed, <i>Ajuga reptans</i>	Light, medium or full	4" tall, flower spikes to 12"	Semi-evergreen foliage ranges from solid green to variegated green, white and burgundy/red. Flower color is usually blue or purple, but some pink or white forms are available. The closely related <i>A. pyramidalis</i> 'Metallica Crispa' has bronze foliage and blue flowers in spring.
Bethlehem sage, Lungwort, <i>Pulmonaria saccharata</i>	Light, medium or full	1-1½' tall	Rosettes of straplike leaves, most varieties with some silvery mottling. 'Mrs. Moon' is a good variety. Pink flower buds open to blue flowers in spring.
Boston ivy, <i>Parthenocissus tricuspidata</i>	Light, medium or full	6-12" tall to 50' in length	Native vine with three-lobed leaves. Similar in growth habit and requirements to Virginia creeper. Lustrous green leaves turn red in fall.
Common periwinkle, <i>Vinca minor</i>	Light to medium	6" tall	Vining, matlike evergreen ground cover. Glossy green leaves. Blue flowers in spring and sporadically through the summer. Grows well under trees.
English ivy, <i>Hedera helix</i>	Light, medium or full	6-12" tall	Trailing evergreen vine. Prune or mow annually to maintain density. Many selections available. Leafspot can be a problem. Grows well under trees.
Epimedium, Barrenwort, <i>Epimedium</i> sp.	Light, medium or full	Most are 1-1½' tall	Heart-shaped trifoliate leaves, often with some red or bronze coloration. Flowers in spring are usually yellow or white, resembling small orchids. Relatively slow growing.
Hosta, Plantain lily, <i>Hosta</i> sp.	Light, medium to full	varies from 3" to 3' tall	Many species and cultivars of hosta are available. Foliage colors range from solid green, yellow-green or blue-green to variegated forms with white or gold markings. Many produce stalks of white to lavender flowers. Tolerate most growing conditions.
Japanese spurge, <i>Pachysandra terminalis</i>	Light to medium	8-10 tall	Glossy green, semi-evergreen foliage. White flowers in spring. The Allegheny pachysandra, <i>P. procumbens</i> , is native, and better adapted to Missouri's climate, but more difficult to find.
Lily-of-the-Valley, <i>Convallaria majalis</i>	Light, medium or full	8" tall	Fragrant stalks of white bell-shaped flowers in late spring. Foliage may deteriorate late in the season. Prefers moist, fertile sites, but tolerates most shady locations.
Lilyturf, <i>Liriope spicata</i>	Light, medium or full	1' tall	Dark green, grasslike foliage. White to lavender flower spikes similar to grape hyacinths develop in late summer. <i>L. muscari</i> , Big blue lilyturf grows to 1½' tall and produces dark purple flowers. It is best in the southern half of the state.
Mock strawberry, <i>Duchesnea indica</i>	Light, medium or full	6" tall	Semi-evergreen trailing foliage. Rampant grower. Yellow blossoms through much of the summer, followed by strawberry-like fruits. Tolerates drought and heat.
Plumbago, Leadwort, <i>Ceratostigma plumbaginoides</i>	Light to medium	12" tall	Deep blue flowers from midsummer through fall. Yellow, red, and bronze fall foliage contrasts nicely with flowers. Slow to start growth in spring.
Sweet woodruff, <i>Gallium odoratum</i>	medium to full	6-8" tall	Whorls of bright green leaves around creeping stems. Small white flowers in late spring. Prefers moist soil.
Virginia creeper, Woodbine, <i>Parthenocissus quinquefolia</i>	Light, medium or full	1' tall to 50' long	Tough vine for most any situation. Will climb to tree tops. Colors early in the fall, developing a red or purplish coloration. Engelmann ivy is similar, but with smaller leaves.
Wild ginger, <i>Asarum canadense</i>	Light, medium or full	6" tall	Native to Missouri woodlands. Deciduous, heart-shaped, leathery green leaves. Flowers are purplish brown in spring, but usually hidden by leaves. European ginger, <i>A. europaeum</i> is evergreen with glossy foliage.
Wintercreeper, <i>Euonymus fortunei</i>	Light, medium or full	½-2' tall	Vining woody semi-evergreen ground cover. Many cultivars are available: 'Coloratus' turns purple in winter, 'Emerald Gaiety' has variegated white leaf margins, 'Emerald and Gold' is variegated green and yellow. Scale insects can be a severe problem.
Yellow archangel, Dead nettle, <i>Lamium galeobdolon</i>	Light, medium or full	1-1½' tall	Fast-growing vinelike ground cover. The form with silver variegation is most desirable. Yellow flowers in late spring. Shear in midsummer for more compact growth.

Flowers

Many spring flowering bulbs grow well in shady sites, particularly under trees that leaf out late in the spring. The bulbs bloom early, and complete their growth for the year before the shade becomes too dense. Daffodil (*Narcissus* sp.), crocus (*Crocus* sp.), snowdrop (*Galanthus* sp.), scilla (*Scilla* sp.), glory-of-the-snow (*Chionodoxa* sp.), winter aconite (*Eranthis* sp.), striped squill (*Puschkinia* sp.), and camass (*Camassia* sp.) will all perform well in shady, well-drained sites. Numerous spring wildflowers have a similar adaptation. They bloom in early spring and

die down before the heat of summer arrives. Native woodland and savannah plants with this growth habit include Virginia bluebells (*Mertensia virginiana*), spring beauty (*Claytonia virginica*), bloodroot (*Sanguinaria canadensis*), blue-eyed Mary (*Collinsia verna*), wild sweet William (*Phlox divaricata*), and toothwort (*Dentaria laciniata*). Table 5 lists additional cultivated perennial flowers for shade gardens. Table 6 describes some shade-tolerant annual flowers. For additional information on annuals, consult MU publication G 6629, *Flowering Annuals: Characteristics and Culture*.

Table 5. Perennial flowers.

Plant name	Shade tolerance	Size	Comments
Alumroot, Coral bells, <i>Heuchera</i>	Light to medium	1-2' tall	American alumroot, <i>H. americana</i> , is grown primarily for its foliage. 'Palace Purple' is a purplish-bronze leaved selection. Coral bells, <i>H. sanguinea</i> , produce airy panicles of rose, pink or white blooms through much of the summer if old flower stalks are removed.
Astilbe, False Spirea, <i>Astilbe</i> sp.	Light to medium	6"-4' tall	Numerous species, cultivars and hybrids are available, with flower colors ranging from white, to pink, red, and lavender during summer. Finely divided foliage is fernlike. Require moisture through the summer, but need good drainage through the winter.
Balloon flower, <i>Platycodon grandiflorus</i>	Light to medium	1-3' tall	Flower buds look like inflated balloons. Open to bell-shaped blue, pink or white blooms. Slow to emerge in spring.
Bellflower, <i>Campanula</i> , <i>Campanula</i> sp.	Light to medium	3' to 4' tall	Many species available. Blue, purple or white flowers through much of the summer. Most prefer partial shade in the heat of the summer.
Bergenia, Pigsqueak, <i>Bergenia cordifolia</i>	Light, medium or full	6"-1' tall	Large, shiny evergreen leaves often develop purplish coloration in winter. Clusters of pink flowers in the spring.
Bleedingheart, <i>Dicentra</i> sp.	Light to medium	1-3' tall	Old-fashioned bleedingheart, <i>D. spectabilis</i> , produces arches of pink, heart-shaped blooms in spring, then dies down. <i>D. eximia</i> , fringed bleedingheart, and its hybrids are smaller, have finer-textured foliage and repeat blooms all season long.
Bugloss, <i>Brunnera macrophylla</i>	Light to medium	1-2' tall	Green, heart-shaped leaves. Clusters of small, true-blue flowers in spring. Tolerates dry shade, but prefers moisture.
Cardinal flower, <i>Lobelia cardinalis</i>	Light to medium	3-4' tall	Brilliant spires of red flowers in late summer. Cultivated forms may have green or bronze foliage. Needs moist soil.
Christmas fern, <i>Polystichum acrostichoides</i>	medium to full	2' tall	Native, evergreen fern. Dark green foliage provides a nice backdrop for other plants. Prefers moist, well-drained soil. Leathery fronds are useful in floral arrangements.
Cranesbill, Geranium, <i>Geranium</i> sp.	Light to medium	1-2' tall	Many species and cultivars are available. Flower color is usually pink to blue, but some whites are available. Flowers are most abundant in early summer, with some varieties blooming all season. Most form spreading clumps suitable as a ground cover.
Daylily, <i>Hemerocallis</i> sp.	Light to medium	1-3' tall	Daylilies tolerate fairly deep shade, but will bloom best in sun. Adaptable to most soil types.
Hardy ageratum, Mist flower, <i>Eupatorium coelestinum</i>	Light to medium	1-2' tall	Powder puff blue flowers in late summer to fall. Prefers at least partial sun. Spreads readily.
Lady's mantle, <i>Alchemilla mollis</i>	Light to medium	1-1½' tall	Silky, palmate leaves collect dewdrops. Lime green flowers in spring to early summer. Prefers moist site.
Ostrich fern, <i>Matteuccia pensylvanica</i>	Light, medium to full	4' tall	Fiddleheads in spring unfold to lacy medium green leaves. Needs moisture to prevent leaf scorch.
Toad lily, <i>Tricyrtis hirta</i>	Light to medium	2-3' tall	Produces multiple white flowers mottled with purple in late summer to fall. Exotic appearance. Prefers moisture.
Turtlehead, <i>Chelone</i> sp.	Light to medium	3-4' tall	Pink turtlehead, <i>C. lyonii</i> , has pink flowers in late summer to early fall on upright plants with glossy green foliage. <i>C. obliqua</i> has deeper rose colored blooms. Both need moisture.