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Firewise Landscaping

Minimizing the Loss of Structures
Caused by Forest and Grass Fires



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The Firewise Landscape

Fire is a natural part of our environment. Fire rids the environment of debris, diseased organisms, and many insects and assists with the survival of the strongest plants. Fire is also important for regeneration of natural life and balance in the environment. However, people and fire are generally not compatible in residential environments.

Loss of homes and businesses from fire is not just a problem of dry regions such as California or Florida. Annual spring and fall fire seasons can contribute to fire losses in Ohio. Wildfires can be caused by natural phenomena but are more frequently human-caused, either accidentally or deliberately. Either type of ignition can result in loss of personal property without some form of wildfire protection.

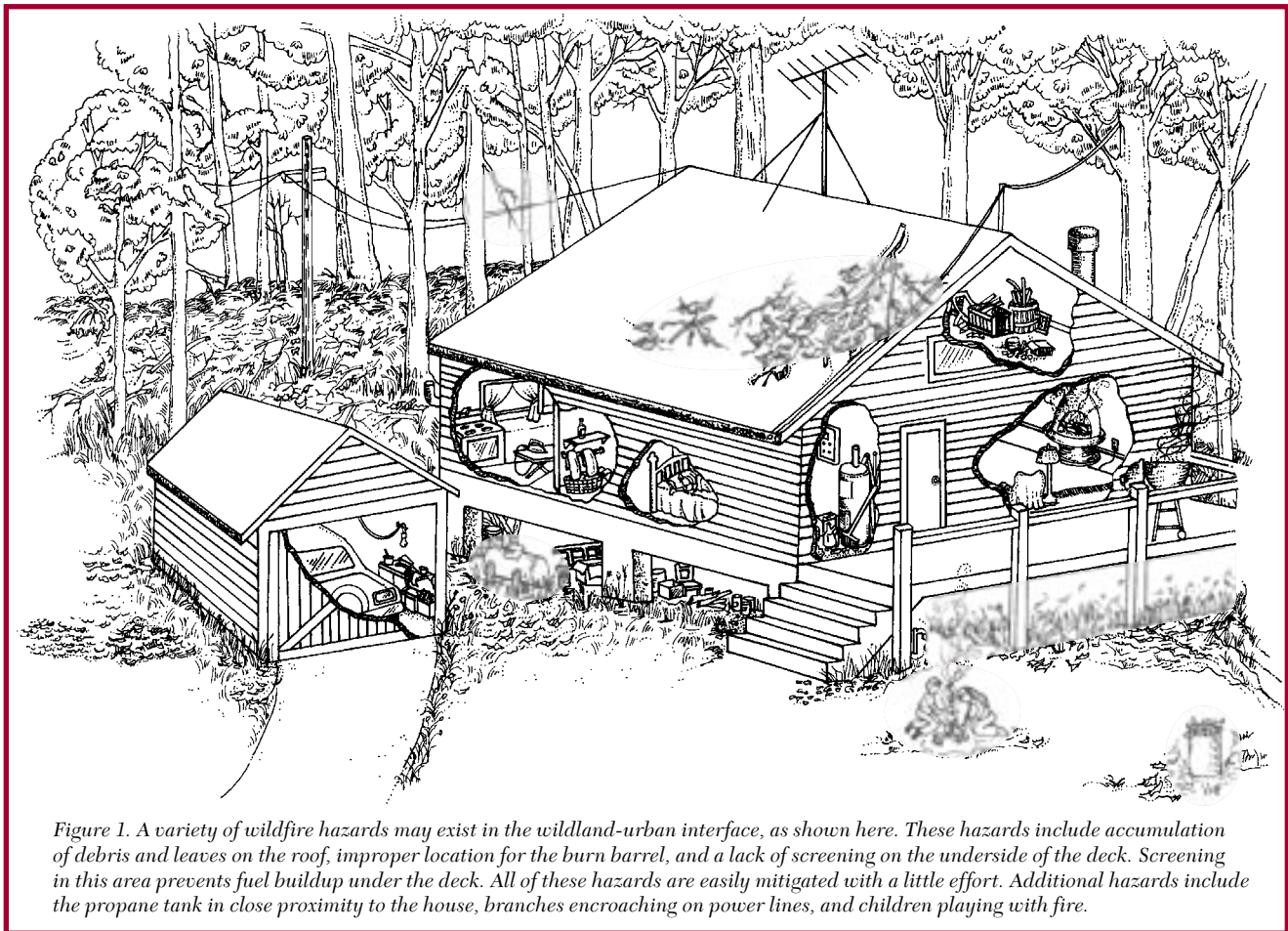


Figure 1. A variety of wildfire hazards may exist in the wildland-urban interface, as shown here. These hazards include accumulation of debris and leaves on the roof, improper location for the burn barrel, and a lack of screening on the underside of the deck. Screening in this area prevents fuel buildup under the deck. All of these hazards are easily mitigated with a little effort. Additional hazards include the propane tank in close proximity to the house, branches encroaching on power lines, and children playing with fire.

When the forest or grassland becomes developed into a community of residences, fires and homes become inseparable. Flammable vegetation oftentimes surrounds a home in a woodland or open range setting. Firewise Landscaping can help you create a defensible space or fire buffer zone around your home. This not only helps to keep fire from approaching your home but also provides a safe space in which firefighters can work.

To create a buffer zone around your home, you will need to inventory the yard and determine which plants can catch fire more easily and which plants can carry fire to the house. You'll need to consider any mulches in the landscape as well. Your goal in Firewise Landscaping should be to break the chain of fuel between the surrounding natural vegetation and your home.

Firewise Zones

Firewise zones, or zones to protect personal property, should be used when landscaping in sites that have a fire risk.

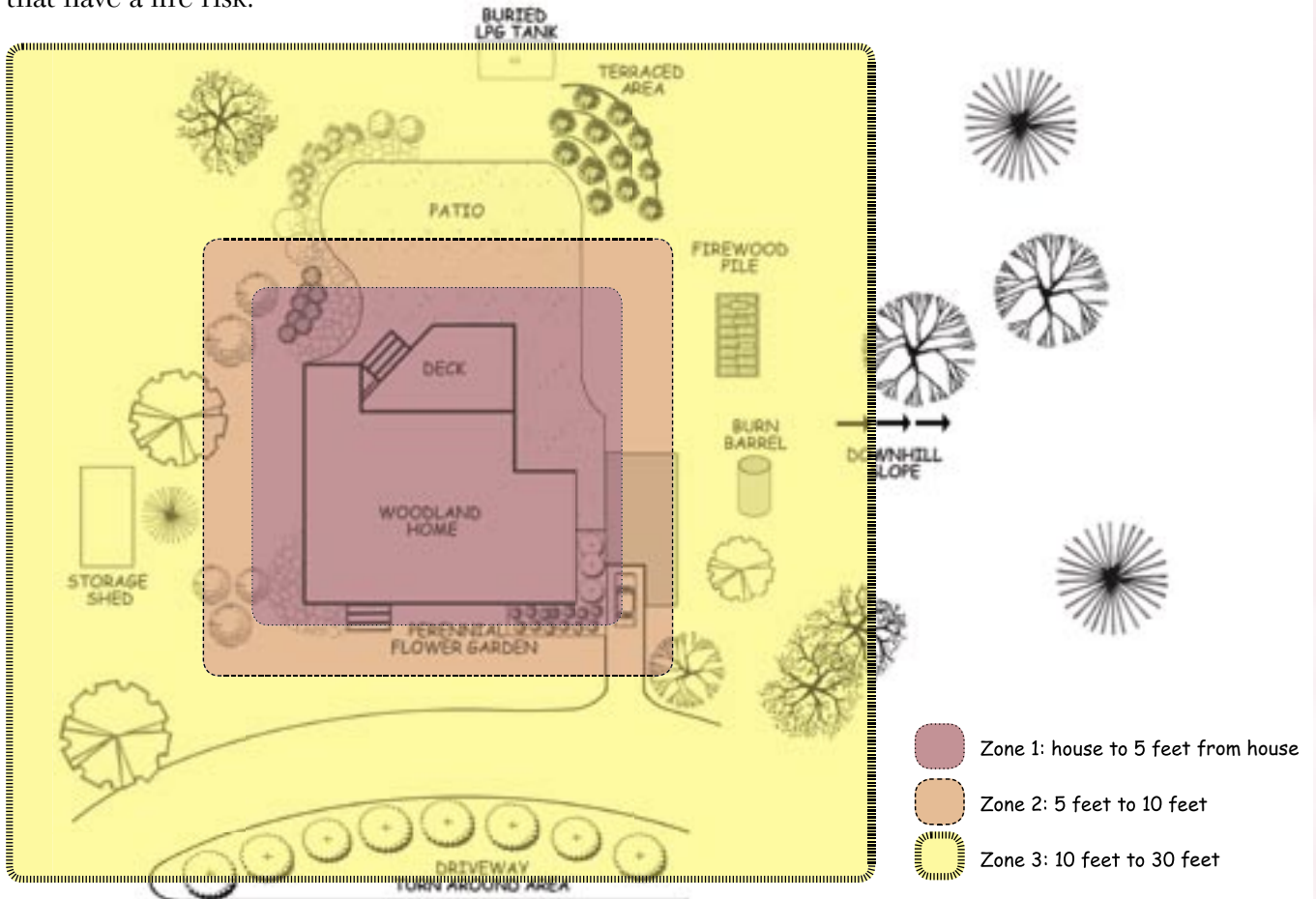


Figure 2. The three Firewise Zones. Zone 1 is closest to the home, while Zones 2 and 3 subsequently extend out from the structure.

Zone 1: House to 5 Feet from the House

Have nothing flammable next to the house — this includes trees, brush, tall grass, leaves, firewood piles, bark mulch, and other flammable materials. Carefully examine under decks and in dense vegetation for accumulated dead material and debris. Prune trees that hang over the house to eliminate possible fire transfer.



Flammable vegetation



Firewise landscaping

Zone 2: 5 Feet to 10 Feet from the House

Maintain a well-kept lawn and avoid evergreens that catch fire easily and burn quickly. Use raised beds, rock gardens, stone walkways, walls, and patios to create visual interest while maintaining a fuel break. Any trees used in this zone should be kept small and should be at least 10 ft. from the house. Leave 10 to 15 feet of clearance space between tree crowns to avoid fire transfer.



Flammable vegetation



Firewise landscaping

Zone 3: 10 Feet to 30 Feet from the House

Remove yard debris and thin vegetation out to at least 30 ft. from the house. Driveways provide a break in vegetation and can also be used to provide interest in the landscape. On a slope, one should extend clearing and thinning to 100 ft. on the downhill side. Shrubs and ground covers should be well maintained, kept free of dead material, and kept small. Brush and weeds need to be cut or controlled annually. Steep slopes can be terraced to slow down wildfire spread. Trees in this zone should also have a minimum of 10 to 15 feet of clearance space between tree crowns to prevent the spread of fire.



Flammable vegetation



Firewise landscaping

The Plants

Although some plants are more fire-resistant than others, **THERE ARE NO FIRE PROOF PLANTS. UNDER EXTREME FIRE CONDITIONS, ALL PLANTS WILL BURN!** A general flammability rating has been placed on the trees, shrubs, ground covers, vines, herbaceous perennials, grasses, and mulches listed in this publication. These ratings can help you make sound landscaping choices and subsequently create a Firewise Landscape around your woodland home.

Before selecting and purchasing plants, you should always carefully plan their place in your yard. Spacing and density of plants that grow around the residence can be more crucial than what species is planted.

Proper maintenance is also vital to help plants retain their fire-resistant properties. Removal of natural debris, such as dead leaves and twigs, will preserve or increase fire resistance, whereas lack of maintenance can make plants more flammable. Follow the basics of plant pruning — remove deadwood, diseased wood, and cross-branches. Each of these steps can increase a plant's fire resistance.

Fires in Ohio occur in the spring, prior to green up, and in the fall, as plants are dropping foliage, consequently increasing the available fuel load. Typically, summer weather conditions in Ohio do not support wildfire because plants are lush and green and moisture levels are increased. Ohio winters are generally cool, damp, and not conducive to wildfire ignition and spread. However, weather and moisture conditions can change easily and provide an available fuel load even in summer and winter months.

Choose Special Trees and Shrubs

Trees and shrubs having the characteristics listed here are more desirable in a Firewise Landscape:

- High leaf moisture and low leaf oil or resin content.
- Minimal litter and accumulated debris potential.
- Limited foliage.
- Open, loose branching habit.
- Few dead branches.
- Low overall height or high branching above the ground surface.
- Easy maintenance and low pruning requirements.
- Drought resistance.

Non-native and/or invasive plants can result in an excess of flammable plant material.

Flammability Ratings for Commonly Planted Native and Exotic Landscape Plants

Deciduous trees, deciduous shrubs, evergreen trees, evergreen shrubs, ground covers, vines, landscape perennials, and grasses all have different fire potential. In the pages that follow, you will find flammability ratings for the commonly grown plants in each of these categories. Flammability ratings for each category are reported in separate tables.

The flammability ratings are the result of the authors' experience and that of others. The place of origin is given for each plant. Many individuals involved with plantings at the urban-wildland interface may well wish to confine their choices to native plants to retain a more natural look and feel for their property. Comments on each of the plants provide additional information that is helpful to homeowners in planning their Firewise Landscape.

Deciduous Trees

Homeowners are perhaps most familiar with this group of plants. These are the larger woody plants, generally with a single trunk, and are trees that dominate the woodland landscape. These plants lose their leaves in the fall. Deciduous trees provide excellent shade in the summer and are very attractive, especially in the fall with their colorful foliage. They can be forest trees, and their growth rates range from fast to slow.

Deciduous trees are typically not as flammable as evergreen trees; however, some deciduous trees produce large quantities of leaf litter in the fall. If left in inappropriate areas, this debris can contribute to an increased fuel load and subsequent fire hazard. The best way to combat this hazard is to keep leaves raked and roofs and gutters free of leaf debris around the residence.



Table 1. Deciduous Trees

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Acer buergerianum</i>	Trident Maple	E	Sp, Sc	L	Moderate urban tolerance; moderate size.
<i>Acer campestre</i>	Hedge Maple	E	Sp, Sc	L	Disease sensitive; urban tolerant; will grow foliage to the ground.
<i>Acer x Freemanii</i>	Freeman Maple	N	S, Sp, Sc	L	Urban tolerant; disease resistant; long-lived; pH tolerant.
<i>Acer negundo</i>	Boxelder	N	S	L	Tolerates poor soils; pH adaptable; disease prone; short-lived.
<i>Acer palmatum</i>	Japanese Maple	E	Sp	L	Cold sensitive; disease sensitive; drought tolerant.
<i>Acer pensylvanicum</i>	Striped Maple	N	Sp, S	L	Prefers shade; disease sensitive.
<i>Acer platanooides</i>	Norway Maple	E	S	L	Tolerates a wide range of soil conditions; disease sensitive.
<i>Acer rubrum</i>	Red/Swamp Maple	N	S, Sp	L	May tolerate wet soil; intolerant of wounding and alkaline soil.
<i>Acer saccharinum</i>	Silver Maple	N	S	L	Tolerates a range of soils; stress intolerant; disease sensitive.
<i>Acer saccharum</i>	Sugar/Hard Maple	N	S, Sp	L	Susceptible to road deicing salts. Drought intolerant.
<i>Acer spicatum</i>	Mountain Maple	N	S, Sc	L	Best in wooded conditions; disease sensitive.
<i>Aesculus x carnea</i>	Ruby-Red Horsechestnut	E	S, Sp	L	Somewhat stress tolerant; slow growing.
<i>Aesculus glabra</i>	Ohio Buckeye	N	Sp	L	Forest understory tree; disease prone; stress intolerant; slow growing.
<i>Aesculus hippocastanum</i>	Horsechestnut	E	S, Sp	L	Susceptible to many diseases; pH adaptable; urban tolerant.
<i>Aesculus octandra</i>	Yellow Buckeye	N	S, Sp	L	Most stress-tolerant buckeye.
<i>Aesculus pavia</i>	Red Buckeye	N	Sc	L	Small; shrubby; urban tolerant.
<i>Albizia julibrissin</i>	Mimosa, Silktree	E	Sp	L	Cold sensitive; adaptable to high pH, soil salinity, and drought.

Table 1. Deciduous Trees (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flamma- bility Rating***	Comments
<i>Amelanchier arborea</i>	Downy Serviceberry, Shadblow	N	Sp, Sc	L	Drought tolerant; edible fruit; wound intolerant.
<i>Amelanchier laevis</i>	Serviceberry, Shadblow	N	Sp, Sc	L	Tolerates moisture extremes; edible fruit; wound intolerant.
<i>Aralia spinosa</i>	Devil's Walkingstick	N	Sp	L	Tolerates poor soils and urban conditions; lightly armed.
<i>Asimina triloba</i>	Pawpaw	N	Sp, S	L	Tolerant of wet soils; edible fruits; urban tolerant.
<i>Betula alleghaniensis</i>	Yellow Birch	N	S, Sp	L	Not tolerant of heat/drought; very site specific in Ohio.
<i>Betula lenta</i>	Sweet Birch	N	S, Sp	L	Similar to Yellow Birch; native in northeastern Ohio.
<i>Betula nigra</i>	River Birch	N	S, Sp	L	Tolerates wet soils; not tolerant of high pH; cold sensitive.
<i>Betula papyrifera</i>	Paper/Canoe Birch	N	Sp, S	L	Insect problems; not heat tolerant; stress intolerant.
<i>Betula pendula</i>	European White Birch	E	Sp, S	L	Prone to bronze birch borer damage; not heat tolerant.
<i>Carpinus betulus</i>	European Hornbeam	E	S	L	Shade tolerant; marginal urban stress tolerance.
<i>Carpinus caroliniana</i>	American Hornbeam	N	S	L	Shade tolerant; urban stress intolerant.
<i>Carya cordiformis</i>	Bitternut Hickory	N	S	L	Fast growing pecan hickory; construction tolerant; bitter fruit.
<i>Carya glabra</i>	Pignut Hickory	N	S, Sp	L	Tolerates varied soils; construction tolerant.
<i>Carya illinoensis</i>	Pecan	N	S	L	Edible nut; fast growing; use cold hardy cultivars.
<i>Carya ovata</i>	Shagbark Hickory	N	S	L	Interesting peeling bark; edible fruit; construction tolerant; pH adaptable.
<i>Carya tomentosa</i>	Mockernut Hickory	N	S	L	Tolerates varied soils; construction tolerant.
<i>Castanea dentata</i>	American Chestnut	N	S	L	Rare; disease sensitive; short-lived.
<i>Castanea mollissima</i>	Chinese Chestnut	E	S, Sp	M	Tolerates hot, dry climates; less disease sensitive.
<i>Catalpa bignonioides</i>	Southern Catalpa	E	S	L	Tolerates many soil types; also hot, dry sites; urban tolerant.
<i>Catalpa speciosa</i>	Northern Catalpa	N	S	L	Tolerates many soil types; also hot, dry sites; urban tolerant.
<i>Celtis laevigata</i>	Sugarberry	N	S	L	Tolerates many soil types and conditions; urban tolerant.
<i>Celtis occidentalis</i>	Common Hackberry	N	S	L	Tolerates wind and poor soils; pH adaptable; urban tolerant.
<i>Cercidiphyllum japonicum</i>	Japanese Katsura	E	Sp	L	Woodland edge adapted; stress intolerant.
<i>Cercis canadensis</i>	Eastern Redbud	N	Sp, S	L	Woodland edge native; disease sensitive; short-lived.
<i>Chioanthus virginicus</i>	Fringetree	N	Sp	L	Tolerates partial shade and air pollution; multi-stemmed.
<i>Cladrastis kentuckea</i>	Yellowwood	N	Sp, S	L	Prune in summer; heat intolerant; insect prone; poor structure.
<i>Cornus florida</i>	Flowering Dogwood	N	Sp, S	L	Shade tolerant; moisture, stress, insect, and disease intolerant.

Table 1. Deciduous Trees (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Crataegus crus-galli</i>	Cockspur Hawthorn	N	Sp	L	Heavily armed but thornless forms are available. Disease sensitive; longer lived; subject to windthrow.
<i>Crataegus x lavallei</i>	Lavelle Hawthorn	E	Sp	L	Lightly armed; disease and windthrow sensitive; moderate service-life.
<i>Crataegus mollis</i>	Downy Hawthorn	N	Sp	L	Disease and windthrow sensitive; moderately armed; moderate service-life.
<i>Crataegus phaenopyrum</i>	Washington Hawthorn	N	Sp	L	Dangerously armed; susceptible to rust diseases; moderate service-life.
<i>Crataegus punctata</i>	Dotted Hawthorn	N	Sp	L	Lightly armed; disease sensitive; moderate service-life; subject to windthrow.
<i>Crataegus viridis</i>	Green Hawthorn	N	Sp	L	Disease tolerant; moderate service-life; subject to windthrow; lightly armed.
<i>Diospyros virginiana</i>	Persimmon	N	S	L	Tolerates poor and dry soils; pH adaptable; edible fruit.
<i>Elaeagnus angustifolia</i>	Russian-Olive	E	Sc, Sp	M	Very disease sensitive; salt tolerant; withstands drought.
<i>Eucommia ulmoides</i>	Hardy Rubbertree	E	S	L	Compaction intolerant; drought tolerant.
<i>Fagus grandifolia</i>	American Beech	N	S, Sp	M	Construction intolerant; climax forest tree.
<i>Fagus sylvatica</i>	European Beech	E	S, Sp	M	Moderate construction tolerance; climax forest tree.
<i>Fraxinus americana</i>	White Ash	N	S	L	Drought sensitive; heat tolerant; fails without warning.
<i>Fraxinus nigra</i>	Black Ash	N	S	L	Tolerates wet soils and periodic flooding; heat sensitive.
<i>Fraxinus pennsylvanica</i>	Green Ash	N	S	L	Tolerates drought, alkaline soil, and salt; fails without warning; insect sensitive under stress.
<i>Ginkgo biloba</i>	Ginko, Maidenhair Tree	E	S, Sp	L	Urban tolerant; nuts are edible but malodorous; use male cultivars.
<i>Gleditsia triacanthos</i>	Common Honeylocust	N	S	L	Tolerates drought, soil salts, and high pH. Use thornless forms, as thorns are dangerous.
<i>Gymnocladus dioica</i>	Kentucky Coffeetree	N	S	L	Tolerates drought and urban conditions; irregular growth habit.
<i>Halesia carolina</i>	Carolina Silverbell	N	Sp	L	Prefers moist soil; understory tree.
<i>Juglans cinerea</i>	Butternut	N	S	L	Rare; tolerates varied conditions; disease sensitive; requires good site.
<i>Juglans nigra</i>	Black Walnut	N	S	L	Produces allelotoxins; edible nut; fast growth; requires good site.
<i>Koelreuteria paniculata</i>	Goldenraintree	E	Sp, S	L	Tolerates heat, drought, and air pollution; poor fertility; irregular growth.
<i>Liquidambar styraciflua</i>	Sweetgum	N	S, Sp	L	Tolerates moist soils; urban tolerant; fruit is messy.
<i>Liriodendron tulipifera</i>	Tuliptree, Tulip-Poplar	N	S, Sp	L	Does not tolerate poor growing conditions.
<i>Maclura pomifera</i>	Osage-Orange	N	S, Sc	L	Tolerates drought, wind, extreme heat, and wet soils.

Table 1. Deciduous Trees (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flamma-bility Rating***	Comments
<i>Magnolia tripetala</i>	Umbrella Magnolia	N	Sp	L	Coarse texture; disease sensitive; requires good site.
<i>Magnolia virginiana</i>	Sweetbay Magnolia	N	Sp, S	L	Tolerates wet soils, but not drought; wound sensitive.
<i>Magnolia x soulangiana</i>	Saucer Magnolia	E	Sp	L	Resistant to air pollution; prone to spring frost damage.
<i>Malus</i> spp.	Flowering Crabapple	N and E	Sp	L	Variably resistant to insect and disease problems; urban tolerant.
<i>Metasequoia glyptostroboides</i>	Dawn Redwood	E	Sp, S	H	Prefers moist, well-drained soils; pH tolerant; deciduous conifer.
<i>Morus alba</i>	White Mulberry	E	S	L	Adaptable and urban tolerant; prone to insect and disease problems.
<i>Morus rubra</i>	Red Mulberry	N	S	L	Edible fruits; adaptable and urban tolerant; insect and disease prone.
<i>Nyssa sylvatica</i>	Blackgum/Sourgum	N	S, Sp	L	Intolerant of air pollution or alkaline soils; tolerates wet soils.
<i>Ostrya virginiana</i>	Hophornbeam	N	S	L	Stress intolerant; understory plant; insect sensitive.
<i>Oxydendrum arboreum</i>	Sourwood/ Lily-of-the-Valley Tree	N	Sp, S	L	Requires acid soil; woodland edge plant; urban intolerant.
<i>Paulownia tomentosa</i>	Empress Tree, Paulownia	E	S, Sp	L	Marginally hardy; urban tolerant; tolerates restricted soil volumes.
<i>Phellodendron amurense</i>	Amur Corktree	E	S, Sp	L	Compaction intolerant; fruit is messy; requires good site.
<i>Platanus occidentalis</i>	American Sycamore	N	S	M	Urban tolerant; prone to cosmetic insects and diseases.
<i>Platanus x acerifolia</i>	London Planetree	E	S	M	Stress sensitive; fatal disease sensitive; fails without warning.
<i>Populus alba</i>	White Poplar	E	S	L	Suckers readily; urban tolerant; pH tolerant.
<i>Populus deltoides</i>	Cottonwood	N	S	L	Tolerant of most soil conditions; short-lived.
<i>Populus grandidentata</i>	Big-Toothed Aspen	N	S	L	Tolerates dry soils; pH tolerant.
<i>Populus tremuloides</i>	Quaking Aspen	N	S	L	Suckers readily; pH tolerant. Tends to suppress fire.
<i>Prunus cerasifera</i>	Cherry Plum	E	Sp	L	Avoid heavy soils and air pollution; prone to many insect problems.
<i>Prunus persica</i>	Common/Flowering Peach	E	Sp	L	Subject to many insect and disease problems; short-lived.
<i>Prunus sargentii</i>	Sargent's Cherry	E	Sp	L	Moderate life expectancy.
<i>Prunus serotina</i>	Wild Black Cherry	N	S	L	Tolerates most soil types; wilted foliage is poisonous to livestock.
<i>Prunus serrulata</i>	Japanese Flowering Cherry	E	Sp	L	Cold sensitive; insect and disease sensitive; short-lived.
<i>Prunus subhirtella</i>	Higan Cherry	E	Sp	L	Insect sensitive; weeping forms available; moderate life expectancy.
<i>Prunus x yedoensis</i>	Yoshino Cherry	E	Sp	L	Cold sensitive; prone to borer attack; short-lived.

Table 1. Deciduous Trees (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Pyrus calleryana</i>	Callery Pear	E	S, Sp	L	Drought-resistant; prune to reduce co-dominant leaders; urban tolerant.
<i>Pyrus communis</i>	Common Pear	E	S	L	Variable disease sensitivity; urban tolerant; prune to improve stability.
<i>Quercus alba</i>	White Oak	N	S	L	Construction tolerant; intolerant of fill; pH tolerant.
<i>Quercus bicolor</i>	Swamp White Oak	N	S	L	Tolerates moist soils; pH tolerant; construction tolerant.
<i>Quercus coccinea</i>	Scarlet Oak	N	S	L	Less tolerant than other oaks of adverse conditions.
<i>Quercus falcata</i>	Southern Red Oak	N	S	L	Prefers drier soils; construction tolerant; use northern seed source.
<i>Quercus macrocarpa</i>	Bur Oak	N	S	L	High pH tolerant; construction tolerant; fire resistant bark.
<i>Quercus marilandica</i>	Blackjack Oak	N	S	L	Tolerates poor soils; construction tolerant.
<i>Quercus muehlenbergii</i>	Chinquapin Oak	N	S	L	Alkaline soil; construction tolerant.
<i>Quercus palustris</i>	Pin Oak	N	S	L	Use local seed sources; tolerates moist soils, construction.
<i>Quercus phellos</i>	Willow Oak	N	S	L	Cold sensitive seed sources required; construction tolerant.
<i>Quercus prinus</i>	Chestnut Oak	N	S	L	Tolerates dry, poor, restricted soils; construction tolerant.
<i>Quercus rubra</i>	Red/ Northern Red Oak	N	S	L	Moderately drought tolerant; construction tolerant.
<i>Quercus stellata</i>	Post Oak	N	S	L	Tolerates dry, poor soil conditions; construction tolerant.
<i>Quercus velutina</i>	Black Oak	N	S	L	Tolerates drought; fire resistant bark; construction tolerant.
<i>Robinia pseudoacacia</i>	Black Locust	N	S	L	Tolerates dry soils; new growth lightly armed.
<i>Salix babylonica</i>	Weeping Willow	E	S, Sp	L	Grows in wet soils; construction tolerant.
<i>Salix nigra</i>	Black Willow	N	S	L	Grows in wet soils; construction tolerant.
<i>Sassafras albidum</i>	Sassafras	N	S, Sp	L	Suckers readily.
<i>Sophora japonica</i>	Japanese Sophora	E	S, Sp	L	Use cold hardy sources; disease sensitive; fruit can be messy.
<i>Sorbus americana</i>	American Mountainash	N	Sp, S	L	Heat intolerant.
<i>Sorbus aucuparia</i>	European Mountainash	E	Sp	L	Heat intolerant; disease sensitive.
<i>Stewartia pseudocamellia</i>	Japanese Stewartia	E	Sp	L	Cold sensitive.
<i>Syringa reticulata</i>	Japanese Tree Lilac	E	Sp	L	Slow growing.
<i>Taxodium distichum</i>	Bald-Cypress	N	S, Sp	H	Tolerates many soil types; urban tolerant; deciduous conifer.
<i>Tilia americana</i>	American Linden, Basswood	N	S	L	One of the most stress-tolerant lindens; suckers readily; insect prone; pH adaptable.

Table 1. Deciduous Trees (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Tilia x euchlora</i>	Crimean Linden	E	S, Sp	L	Insect sensitive; pH adaptable; suckers readily; wound intolerant.
<i>Tilia heterophylla</i>	White Linden	N	S, Sp	L	One of the most stress-tolerant lindens; suckers readily; insect prone; pH adaptable.
<i>Tilia tomentosa</i>	Silver Linden	E	S, Sp	L	Insect resistant; pH adaptable; suckers readily; wound intolerant.
<i>Ulmus alatus</i>	Winged Elm	N	S	L	Susceptible to insects and diseases; urban tolerant; wound tolerant.
<i>Ulmus americana</i>	American Elm	N	S	L	Susceptible to insects and diseases; urban tolerant; wound tolerant; Dutch Elm Disease (DED)-resistant varieties available.
<i>Ulmus parvifolia</i>	Lacebark/ Chinese Elm	E	S, Sp	L	Urban tolerant; disease and insect resistant; sensitive to ice storms.
<i>Ulmus pumila</i>	Siberian Elm	E	S	L	Fast growing; disease resistant; insect sensitive; urban tolerant; sensitive to ice storms.
<i>Ulmus rubra</i>	Slippery Elm	N	S	L	Susceptible to insects and diseases; urban tolerant; wound tolerant.
<i>Ulmus wilsoniana</i>	Wilson Elm	E	S, Sp	L	Urban tolerant; disease and insect resistant; sensitive to ice storms.
<i>Viburnum lentago</i>	Nannyberry Viburnum	N	Sp	L	More arboreal than Blackhaw Viburnum; urban tolerant; tolerates various soils.
<i>Viburnum prunifolium</i>	Blackhaw Viburnum	N	Sc, Sp	L	Adaptable to many soil types; urban tolerant.
<i>Zelkova serrata</i>	Japanese Zelkova	E	S	L	Stress intolerant; pH adaptable; poor branch structure; disease sensitive.

* Nativity: E = Exotic; N = Native to Ohio.

** Uses: S = Shade; Sp = Specimen; Sc = Screen; H = Hedge; GC = Ground Cover; F = Foundation.

*** Flammability Rating: VH = Very High; H = High; M = Medium; L = Low; VL = Very Low.

Deciduous Shrubs

Many species of deciduous shrubs are useful as landscape plants, providing beauty around the home through flowers, fruit, leaf color and texture, and fall color. Fortunately, many of these species are of relatively low flammability. However, some shrub species retain dead branches and leaves over time. It is necessary to check shrubs periodically to remove dead, accumulated material. Plants in this group with low flammability ratings can be used judiciously in foundation plantings.



When developing a Firewise Landscape, it is very important to consider placement and spacing of shrubs. Proper placement of shrubs is essential in eliminating ladder fuel hazards that can cause the fire to climb to roof level or into the tree canopy around the home.

Table 2. Deciduous Shrubs

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Aesculus parviflora</i>	Bottlebrush Buckeye	N	Sc, Sp	L	Well-suited for use under shade trees; stress tolerant; long-lived.
<i>Alnus rugosa</i> (or <i>serrulata</i>)	Spotted Alder	N	Sc	L	Tolerates wet soils; shade intolerant; short-lived.
<i>Amorpha fruticosa</i>	Indigobush Amorpha, False Indigo	E	Sc	L	Tolerates poor soils.
<i>Aronia arbutifolia</i>	Red Chokeberry	N	Sc	L	Adaptable to soil type; subject to weed invasion.
<i>Aronia melanocarpa</i>	Black Chokeberry	N	Sc	L	Adaptable to soil type; subject to weed invasion.
<i>Berberis thunbergii</i>	Japanese Barberry	E	H, F	L	Urban tolerant; moderately armed.
<i>Buddleia davidii</i>	Butterflybush	E	Sp, Sc	L	Attracts butterflies; cold sensitive.
<i>Callicarpa americana</i>	American Beautyberry	N	Sp, Sc	L	Woodland edge plant; showy fruit.
<i>Callicarpa japonica</i>	Japanese Beautyberry	E	Sp, Sc	L	Showy fruit; more cold hardy than the native.
<i>Calycanthus floridus</i>	Sweetshrub; Carolina Allspice	N	Sp, Sc	L	Aromatic flowers and stems; shade tolerant.
<i>Castanea pumila</i>	Chinkapin, Chinquapin	N	Sc	L	Nuts for wildlife; disease sensitive.
<i>Ceanothus americanus</i>	New Jersey Tea	N	Sp, Sc	L	Tolerates dry soil.
<i>Cephalanthus occidentalis</i>	Buttonbush	N	Sc	L	Well suited for use in wet soils; summer flowering.
<i>Chaenomeles japonica</i>	Japanese Flowering- Quince	E	GC	L	Adaptable species; long-lived; cosmetic diseases; lightly armed.
<i>Chaenomeles speciosa</i>	Flowering-Quince	E	Sp, H, S	L	Adaptable species; long-lived; cosmetic diseases; lightly armed.
<i>Clethra alnifolia</i>	Summersweet Clethra	N	Sp, Sc	L	Well suited for use in wet soils.

Table 2. Deciduous Shrubs (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Cornus sericea</i>	Redosier Dogwood	N	Sc, Sp	M	Prefers moist soils; disease sensitive; cold hardy.
<i>Corylus americana</i>	American Hazelnut	N	Sc	L	Adapts to various soils; shade tolerant.
<i>Corylus avellana</i>	European Filbert	E	Sc	L	Prized for its nut production; adapts to various soils.
<i>Cotinus coggygria</i>	Smokebush	E	Sp, Sc	L	Adapts to various soils; disease sensitive.
<i>Cotoneaster apiculata</i>	Cranberry Cotoneaster	E	F, GC	L	Short-lived; shade intolerant; insect sensitive.
<i>Cotoneaster divaricatus</i>	Spreading Cotoneaster	E	H	L	Longer-lived; shade intolerant; insect sensitive.
<i>Cotoneaster horizontalis</i>	Rockspray Cotoneaster	E	F, GC	L	Tolerates wind; dry, poor soils; very pH adaptable.
<i>Deutzia gracilis</i>	Slender Deutzia	E	Sp, Sc	L	Alkaline soil intolerant; shade intolerant.
<i>Diervilla lonicera</i>	Dwarf Bush-Honeysuckle	N	GC, H, Sc	L	Tolerates exposed sites; more cold hardy species; less vigorous.
<i>Euonymus alatus</i>	Winged Euonymus	E	H, Sc, F	L	Prone to mulch-induced deficiency; insect prone.
<i>Euonymus americanus</i>	Wahoo/Strawberry Bush	N	Sp, Sc	L	Insect susceptible; adaptable to wet or dry soil conditions.
<i>Forsythia x intermedia</i>	Border Forsythia	E	Sp, H, Sc	L	Tolerant of urban conditions; pH adaptable.
<i>Fothergilla major</i>	Large Fothergilla	N	Sp, Sc	L	Requires moist, well drained, acid soils.
<i>Hamamelis vernalis</i>	Vernal Witchhazel	E	Sp, Sc	L	Tolerates poorly drained soils; insect prone.
<i>Hamamelis virginiana</i>	Common Witchhazel	N	Sp, Sc	L	Adaptable to various conditions; insect sensitive.
<i>Hibiscus syriacus</i>	Rose-of-Sharon	E	Sp, Sc	L	Urban tolerant; reseeds readily; marginally cold hardy.
<i>Hydrangea arborescens</i>	Smooth Hydrangea	N	Sp, Sc	L	Suckers freely; shade tolerant; plant parts are poisonous.
<i>Hydrangea macrophylla</i>	Bigleaf Hydrangea	E	Sp, Sc	L	Plant parts are poisonous; tolerates shade.
<i>Hydrangea paniculata</i>	P. G. Hydrangea, Panicle Hydrangea	E	Sp, Sc	L	Plant is very adaptable and long-lived; plant parts are poisonous.
<i>Hydrangea quercifolia</i>	Oakleaf Hydrangea	N	Sp, Sc	L	Plant parts are poisonous; tolerates shade.
<i>Hypericum kalmianum</i>	Kalm St. Johnswort	N	Sp, F, GC	L	Requires good drainage; disease sensitive.
<i>Ilex verticillata</i>	Winterberry Holly	N	Sp, Sc	L	Tolerates wet soils; acid soil preferred.
<i>Itea virginica</i>	Virginia Sweetpire	N	Sp, Sc	L	Tolerates wet soils; requires acid soil.
<i>Kerria japonica</i>	Japanese Kerria	E	Sc, M	M	Suckers freely; aggressive; stems are green; urban adaptive.
<i>Ligustrum obtusifolium</i>	Border Privet	E	H	M	Marginally cold hardy; can be invasive.
<i>Ligustrum vulgare</i>	Common Privet	E	H	M	More cold hardy species; can become invasive.
<i>Ligustrum x vicaryi</i>	Golden Vicary Privet	E	H, Sp	M	Grown for yellow summer foliage.
<i>Lindera benzoin</i>	Spicebush	N	Sc	L	Tolerates shade; has spicy-scented foliage.
<i>Lonicera maackii</i>	Amur Honeysuckle	E	H, Sp	L	Seriously invasive; shade tolerant.
<i>Lonicera fragrantissima</i>	Winter Honeysuckle	E	Sp, Sc	L	Adapts to many soils and pH levels; less invasive.

Table 2. Deciduous Shrubs (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Lonicera xylosteum</i>	Fly Honeysuckle	E	Sp	L	Salt tolerant; appears not to be invasive; rarely fruits.
<i>Myrica pensylvanica</i>	Northern Bayberry	N	Sp, H, M	M	Suckers freely; some salt tolerance; female has fruit.
<i>Philadelphus coronarius</i>	Sweet Mockorange	E	Sp, Sc	L	Adapts to various soils; vase-shaped habit.
<i>Photinia villosa</i>	Oriental Photinia	E	Sp Sc	L	Vase-shaped habit; disease sensitive.
<i>Physocarpus opulifolius</i>	Nine-Bark	N	M, Sc Sp	L	Drought resistant; pH adaptable.
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil	N	M, Sp, F	L	Adapts poorly to hot, humid locations.
<i>Prunus glandulosa</i>	Flowering Almond	E	Sp, H, F	L	Very adaptable; disease and insect sensitive.
<i>Rhamnus frangula</i>	Glossy Buckthorn	E	Sp, Sc, H	L	Urban adaptive; sensitive to nematode damage; invasive.
<i>Rhododendron hybrids</i>	Deciduous Azaleas	E	Sp, Sc	M	Requires moist, well-drained, acidic soil; disease sensitive.
<i>Rhododendron prinophyllum</i>	Roseshell Azalea	N	Sp, Sc	M	Requires moist, well-drained, acidic soil; disease sensitive.
<i>Rhodotypos scandens</i>	Black Jetbead	E	Sc, M	L	Shade tolerant; tolerates poor soil; pest resistant.
<i>Rhus aromatica</i>	Fragrant Sumac	N	Sc M	L	Tolerates poor conditions; shade tolerant; stabilizes soil.
<i>Rhus copallina</i>	Shining Sumac	N	Sc, Sp	L	Tolerates poor conditions; pH adaptable; stabilizes soil.
<i>Rhus glabra</i>	Smooth Sumac	N	Sc	L	Tolerates poor conditions; pH adaptable; stabilizes soil.
<i>Rhus typhina</i>	Staghorn Sumac	N	Sc, Sp	L	Tolerates poor conditions; pH adaptable; stabilizes soil.
<i>Rosa carolina</i>	Carolina Rose	N	Sp, H	L	Tolerates wet soil conditions; thorny stems.
<i>Rosa hybrids</i>	Garden Roses (Florabundas, Grandifloras, and Hybrid Teas)	E	Sp	L	Insect and disease sensitive; thorny stems.
<i>Rosa rugosa</i>	Rugose Rose	E	M, H, Sp,	L	Salt tolerant; tolerates wind, poor soils; very thorny stems.
<i>Rosa virginiana</i>	Virginia Rose	N	Sp, H, Sc	L	Salt tolerant; disease resistant; thorny stems.
<i>Salix caprea</i>	Goat Willow, Pussywillow	E	Sp, Sc	M	Somewhat disease tolerant; tolerates moisture.
<i>Salix discolor</i>	Pussywillow	N	Sp, Sc	L	Tolerates poorly drained soils; disease sensitive; short lived.
<i>Salix purpurea</i>	Basket Willow	E	M, Sc	M	Used in stream bank stabilization.
<i>Sambucus canadensis</i>	Elderberry	N	Sc, Sp	L	Tolerates both wet and dry soils; shade tolerant.
<i>Sambucus pubens</i>	Scarlet Elderberry	N	Sc, Sp	L	Less heat tolerant than Elderberry listed previously; tolerates various soils.
<i>Shepherdia canadensis</i>	Russet Buffaloberry	N	Sc, Sp	M	Tolerates poor sandy soil; drought tolerant.

Table 2. Deciduous Shrubs (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Spiraea japonica</i>	Japanese Spirea	E	M, Sp	L	Requires acid soil; disease sensitive; urban adaptive.
<i>Spiraea nipponica</i>	Nippon Spirea	E	Sp, F	M	Requires acid soil; disease sensitive; urban adaptive.
<i>Spiraea prunifolia</i>	Bridalwreath Spirea	E	Sp, Sc	M	Vase-shaped habit; urban adaptable.
<i>Spiraea x bumalda</i>	Bumald Spirea	E	Sp, F	L	Requires acid soil; disease sensitive; urban adaptive.
<i>Spiraea x vanhouttei</i>	Vanhoutte Spirea	E	Sp, Sc	M	Adaptable to urban and soil conditions; long-lived.
<i>Symphoricarpus orbiculatus</i>	Indian Coralberry	N	Sp, Sc	L	Shade tolerant; has escaped cultivation.
<i>Stephanandra incisa</i>	Cutleaf Stephanandra	E	Sp, M	L	Requires acid soil; urban adaptive.
<i>Syringa meyeri</i>	Meyer Lilac	E	Sp, M, H	L	Disease sensitive; urban tolerant.
<i>Syringa villosa</i>	Late Lilac	E	Sp, Sc	L	Disease sensitive.
<i>Syringa vulgaris</i>	Common Lilac	E	Sp, Sc	L	Prone to cosmetic disease; alkaline soil tolerant.
<i>Syringa x chinensis</i>	Chinese Lilac	E	Sp, Sc	L	Heat tolerant; insect sensitive; alkaline soil tolerant.
<i>Vaccinium angustifolium</i>	Lowbush Blueberry	N	M, Sc, H	L	Grown for its berries; fire tolerant; cold hardy.
<i>Vaccinium corymbosum</i>	Highbush Blueberry	N	Sc, H	L	Tolerates acid, sandy soil conditions; edible fruit.
<i>Viburnum acerifolium</i>	Mapleleaf Viburnum	N	Sc, Sp	L	Tolerates shade; drought tolerant; suckers readily.
<i>Viburnum carlesii</i>	Koreanspice Viburnum	E	Sp, H, Sc	L	Early, fragrant flowers; urban tolerant.
<i>Viburnum dentatum</i>	Arrowwood Viburnum	N	Sc	L	Tolerates high pH and cold temperatures; salt tolerant.
<i>Viburnum opulus</i>	European Cranberry Viburnum	E	Sp, Sc	L	Tolerates wet soils; pH adaptable, similar to <i>V. trilobum</i> .
<i>Viburnum plicatum</i> var. <i>tomentosum</i>	Doublefile Viburnum	E	Sp, Sc	L	Needs good drainage and full sun; short lived.
<i>Viburnum trilobum</i>	Cranberrybush Viburnum	N	Sc, Sp	L	Not heat or drought tolerant; fruit is used for preserves.
<i>Viburnum x burkwoodii</i>	Burkwood Viburnum	E	Sc, Sp	L	Heat and cold tolerant; urban adaptable; pest tolerant.
<i>Viburnum x rhytidophylloides</i>	Lantanaphyllum Viburnum	E	Sc, Sp	L	Urban adaptive, long lived; semi-evergreen foliage.
<i>Weigela florida</i>	Weigela	E	Sp, H, Sc,	L	Urban tolerant; insect and disease tolerant.
* Nativity: E = Exotic; N = Native to Ohio.					
** Uses: S = Shade; Sp = Specimen; Sc = Screen; H = Hedge; GC = Ground Cover; F = Foundation.					
*** Flammability Rating: VH = Very High; H = High; M = Medium; L = Low; VL = Very Low.					

Evergreen Trees

Pine, spruce, and other coniferous species are always popular landscape trees among homeowners, especially for privacy screens and as specimen plants. These trees are generally more flammable than deciduous trees due to various oils and compounds contained within the plants and their foliage. If evergreen trees are incorporated into the landscape, they should always be a safe distance away from the house, and they should be kept 30 feet from the home in Zone 3 (Figure 2).

Evergreen trees burn readily and with very high intensity. Many species drop large amounts of needles, which can accumulate into beds of very flammable fine fuels. This is the type of fuel that can be ignited by a mere spark, if conditions are conducive. Rake needles to prevent hazardous fuel accumulations on or near homes or out buildings.

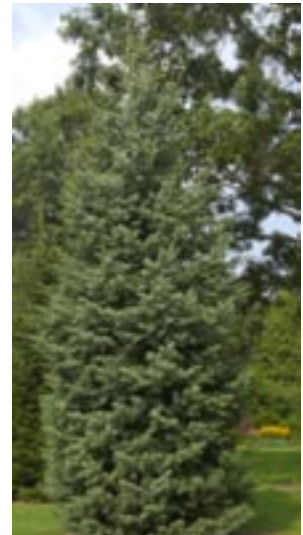


Table 3. Evergreen Trees

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Abies balsamea</i>	Balsam Fir	N	S	H	Use Canaan fir; more tolerant of moist soils than other firs; Christmas tree.
<i>Abies concolor</i>	White Fir	E	Sp	H	Variable urban tolerance; heat intolerant; intolerant of moisture excess.
<i>Abies fraseri</i>	Fraser Fir	N	Sp	H	Common Christmas tree; heat intolerant; requires good drainage.
<i>Chamaecyparis obtusa</i>	Hinoki Falsecypress	E	Sp, Sc	H	Requires good drainage; variable urban adaptability.
<i>Chamaecyparis pisifera</i>	Japanese Falsecypress	E	Sp, Sc	H	Requires good drainage; variable urban adaptability.
<i>Chamaecyparis thyoides</i>	Atlantic Whitecedar	N	Sp, Sc	H	Adapts to wet, boggy sites; heat intolerant.
<i>Chamaecyparis Xanthocyparis nootkatensis</i>	Alaska Falsecypress	E	Sp, Sc	H	Urban adaptive; pest resistant to date in Ohio.
<i>Ilex attenuata 'Fosteri'</i>	Fosters Holly	E	Sp, Sc	H	Urban tolerant; female has fruit; marginally cold hardy.
<i>Ilex opaca</i>	American Holly	N	Sp, Sc	H	Tolerates wet conditions; use cold hardy cultivars; cosmetic insect concerns.
<i>Juniperus communis</i>	Common Juniper	N	Sp, GC	VH	Tolerant of various soils; shade intolerant; disease sensitive.
<i>Juniperus scopulorum</i>	Western Redcedar	E	Sc, Sp, GC	VH	Requires good drainage; pH adaptive; tolerates poor fertility and drought.
<i>Juniperus virginiana</i>	Eastern Redcedar	N	Sc, Sp	VH	Alternate host for rust diseases; tolerates urban conditions; pH adaptive.
<i>Magnolia grandiflora</i>	Southern Magnolia	N	Sp	H	Use cold hardy cultivars; broadleaved; considerable litter.
<i>Picea abies</i>	Norway Spruce	E	Sp	H	Tolerates insects and disease; most adaptive spruce; resists windthrow.
<i>Picea glauca</i>	White Spruce	E	Sp	H	Withstands drought, wind, and temperature extremes.

Table 3. Evergreen Trees (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Picea pungens</i>	Colorado Spruce	E	Sp	H	Drought tolerant; insect and disease prone; prone to windthrow.
<i>Pinus bungeana</i>	Lacebark Pine	E	Sp, Sc	H	Storm damage prone; disease resistant; urban tolerant.
<i>Pinus echinata</i>	Shortleaf Pine	N	Sc, Sp	H	Marginally cold hardy; difficult to transplant due to deep taproot.
<i>Pinus nigra</i>	Austrian Pine	E	Sp, Sc	H	Resists drought; salt tolerant; disease sensitive with age.
<i>Pinus rigida</i>	Pitch Pine	N	Sp, Sc	H	Requires good drainage; disease resistant; irregular growth.
<i>Pinus strobus</i>	White Pine	N	Sp, Sc	H	Sensitive to heat, air pollution, and salts; requires good drainage.
<i>Pinus sylvestris</i>	Scots Pine	E	Sp, Sc	H	Disease sensitive; irregular growth pattern; adapts to various soils and high pH.
<i>Pinus thunbergiana</i>	Japanese Black Pine	E	Sp, Sc	H	Tolerates salt spray; sandy soils; cold sensitive; urban tolerant.
<i>Pinus virginiana</i>	Virginia Pine, Jersey Pine	N	Sc	H	Will grow in either sandy or heavy clay soils; disease resistant.
<i>Taxus cuspidata</i>	Japanese Yew	E	Sc, H, Sp, F	H	Cold hardy; urban tolerant; shade tolerant; tolerates pruning.
<i>Thuja occidentalis</i>	Eastern Arborvitae	N	Sc, F, H	H	Requires good drainage; pH adaptive; drought tolerant.
<i>Thuja (Platycladus) orientalis</i>	Oriental Arborvitae	E	Sc, F, H	H	Adapts to many growing conditions; subject to several insect pests.
<i>Thuja plicata</i>	Western Arborvitae	E	Sc, H	H	Reported to have some deer resistance; adapts to urban sites; fast growth.
<i>Tsuga canadensis</i>	Canadian Hemlock, Eastern Hemlock	N	Sp, Sc	H	Very environmentally site specific; two exotic pests may be a concern in the future.
<i>Tsuga caroliniana</i>	Carolina Hemlock	N	Sp, Sc	H	Very environmentally site specific; two exotic pests may be a concern in the future.
* Nativity: E = Exotic; N = Native to Ohio.					
** Uses: S = Shade; Sp = Specimen; Sc = Screen; H = Hedge; GC = Ground Cover; F = Foundation.					
*** Flammability Rating: VH = Very High; H = High; M = Medium; L = Low; VL = Very Low.					

Evergreen Shrubs

These plants react similarly to evergreen trees in terms of fire behavior. They will ignite readily, burn with high intensity, and facilitate rapid fire growth and spread. Planting evergreen shrubs around the home is not recommended due to the high to very high wildfire risk.

If evergreen shrubs are planted in the landscape, they should be widely spaced and planted away from the house. They should not be used in landscape plantings within 5 feet of the house or out buildings (Zone 1) in areas where there is risk of wildfire. As with evergreen trees, clean up and removal of dead material is essential to prevent ignition or spread of fire.

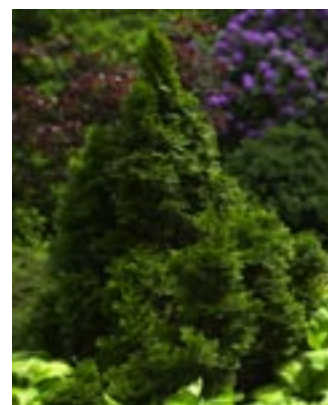


Table 4. Evergreen Shrubs

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Abelia x grandiflora</i>	Glossy Abelia	E	H, F	H	Marginally cold hardy; adapts to various growing conditions.
<i>Buxus</i> hybrids	Hybrid Boxwood	E	F, H, Sp	H	More cold hardy than Japanese or American Boxwood; urban tolerant; more uniform growth.
<i>Buxus microphylla</i>	Japanese Boxwood	E	F, H, Sp	H	Irregular growth pattern; urban tolerant; nematode sensitive.
<i>Buxus sempervirens</i>	American Boxwood	E	F, H, Sp	H	Marginally cold hardy; uniform growth; urban tolerant.
<i>Cotoneaster dammeri</i>	Bearberry Cotoneaster	E	F	H	Tolerates wide range of conditions; use for erosion control; marginally hardy.
<i>Euonymus kiautschovicus</i>	Spreading Euonymus	E	H, Sc	H	Marginally cold hardy; insect and disease sensitive; fruit and leaves may be toxic.
<i>Ilex glabra</i>	Inkberry Holly	N	H, F	H	May be grown in moist, acid soils; drought sensitive; cosmetic insect concerns.
<i>Ilex x meserveae</i>	Blue Holly	E	Sp	H	A male cultivar is necessary for berry production; marginally cold hardy.
<i>Juniperus chinensis</i>	Chinese Juniper	E	F, H, Sc	VH	Tolerant of high pH; variable insect and disease sensitivity; variable habit.
<i>Juniperus communis</i>	Common Juniper	N	Sp, GC	VH	Tolerant of various soils; shade intolerant; disease sensitive; variable habit.
<i>Juniperus scopulorum</i>	Western Redcedar	E	GC, Sc, Sp	VH	Requires good drainage; pH adaptive; tolerates poor soils and drought; variable habit.
<i>Juniperus virginiana</i>	Eastern Redcedar	N	Sc, Sp	VH	Alternate host for rust diseases; tolerates urban conditions; pH adaptive; variable habit.
<i>Kalmia latifolia</i>	Mountain-Laurel	N	F, M, Sp	H	Leaves are poisonous; requires shade and good drainage; insect and disease sensitive.
<i>Leucothoe fontanesiana</i>	Drooping Leucothoe	N	F, M, Sp	H	Not tolerant of drought or wind.
<i>Mahonia aquifolium</i>	Oregon Grapeholly	E	Sp, H, F	H	Susceptible to winter desiccation; urban adaptive.
<i>Pieris japonica</i>	Japanese Pieris	E	Sp, F	H	Requires acid, moist, and well-drained soils; disease sensitive.

Table 4. Evergreen Shrubs (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Pyracantha coccinea</i>	Pyracantha, Firethorn	E	Sp, H, F	H	Tolerates drought; marginally cold hardy; armed; cosmetic disease concerns.
<i>Rhododendron catawbiense</i>	Catawba Rhododendron	N	Sp, Sc	H	Requires acid, moist, well-drained soils; disease sensitive.
<i>Rhododendron maximum</i>	Rosebay Rhododendron	N	Sp, Sc	H	Requires acid, moist, well-drained soils; disease sensitive; heat sensitive.
<i>Rhododendron</i> spp.	Hybrid Azaleas	E	Sp, F, Sc	H	Requires acid, moist, well-drained soils; disease sensitive.
<i>Taxus baccata</i>	English Yew	E	F, H, Sc	H	Toxic foliage; marginally cold hardy; urban tolerant; insect and disease concerns.
<i>Taxus cuspidata</i>	Japanese Yew	E	Sc, H, Sp, F	H	Cold hardy; urban tolerant; shade tolerant; tolerates pruning; toxic foliage.
<i>Taxus x media</i>	Anglojap Yew	E	F, H, Sc	H	Common in commerce; toxic foliage; tolerates pruning; insect and disease concerns.
<i>Viburnum rhytidophyllum</i>	Leatherleaf Viburnum	E	Sp, H, Sc	H	Not wind or heat tolerant; marginally cold hardy; vase-shaped habit.
<i>Xanthoxylum americanum</i>	Prickly-Ash	N	GC, M	M	Tolerant of high pH; shade tolerant; open growing; lightly armed.
<i>Yucca filamentosa</i>	Adam's Needle Yucca	N	Sp, GC	L	Drought resistant and generally maintenance free; shade tolerant; urban tolerant.
* Nativity: E = Exotic; N = Native to Ohio.					
** Uses: S = Shade; Sp = Specimen; Sc = Screen; H = Hedge; GC = Ground Cover; F = Foundation.					
*** Flammability Rating: VH = Very High; H = High; M = Medium; L = Low; VL = Very Low.					

Ground Covers

Coniferous and broadleaf evergreen ground covers are more flammable than deciduous varieties, as they maintain foliage through Ohio's spring and fall fire seasons. Additional volatile oils are also contained in the foliage.

Care should be used in selection of ground cover species as they can provide material or hold debris that will assist in fire spread. Choosing a species that is more succulent and fire resistant will help in Firewise hazard reduction.



Table 5. Ground Covers

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Ajuga reptans</i>	Ajuga, Bugleweed	E	GC	L	Prefers light shade; drought indicator; disease prone; tolerates some foot traffic; invasive.
<i>Arctostaphylos uva-ursi</i>	Bearberry, Kinnickinick	N	GC	L	Prefers well-drained soils; native in sand dunes; difficult to grow.
<i>Euonymus fortunei</i>	Wintergreen Euonymus	E	GC	L	Prone to serious insect and disease problems; can be invasive.
<i>Hedera helix</i>	English Ivy	E	GC	L	Marginally cold hardy; sun and shade tolerant; can be invasive; cosmetic disease sensitive.
<i>Hypericum calycinum</i>	St. Johnswort	E	GC	L	Used in erosion control; poisonous foliage; disease sensitive.
<i>Juniperus communis</i>	Common Juniper	N	GC	H	Tolerant of various soils; shade intolerant; disease sensitive; variable habit.
<i>Juniperus horizontalis</i>	Creeping Juniper	N	GC	H	Requires good drainage and full sun; alternate host for rust diseases; disease sensitive.
<i>Juniperus procumbens</i>	Japanese Garden Juniper	E	GC	H	Grows in many soil types; requires good drainage, full sun.
<i>Liriope muscari</i>	Big Blue Liriope	E	GC	L	Sun and shade tolerant; semi-tolerant of drought; does not sucker readily.
<i>Liriope spicata</i>	Creeping Liriope	E	GC	L	Excellent for erosion control; drought and salt tolerant; sun and shade tolerant; suckers freely.
<i>Opuntia</i> spp.	Prickly Pear	N, E	GC	L	Native to sand dunes in Ohio; intolerant of poor drainage; has spiny stems.
<i>Pachysandra procumbens</i>	Allegheny Pachysandra	N	GC	L	Disease and insect resistant; shade tolerant; not as evergreen as Japanese Pachysandra.
<i>Pachysandra terminalis</i>	Japanese Pachysandra	E	GC	L	Shade tolerant; sensitive to serious insect and disease concerns.
<i>Rhus aromatica</i>	Fragrant Sumac	N	GC	L	Low-growing cultivars are good for erosion control; tolerates drought.

Table 5. Ground Covers (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Vinca minor</i>	Periwinkle; Vinca	E	GC	L	Good for erosion control; finer texture than <i>V. major</i> ; prefers a shaded location.
<i>Xanthorrhiza simplicissima</i>	Yellowroot	N	GC	L	Adaptable to a range of soils; tall ground cover.
* Nativity: E = Exotic; N = Native to Ohio.					
** Uses: S = Shade; Sp = Specimen; Sc = Screen; H = Hedge; GC = Ground Cover; F = Foundation.					
*** Flammability Rating: VH = Very High; H = High; M = Medium; L = Low; VL = Very Low.					

Vines

Vines will create flammability and fire spread problems as a ladder fuel when they cover and grow excessively on exterior walls and across roofs. This growth pattern creates a highly flammable surface directly on the building. Mitigate this hazard by clearing away excessive amounts of vines from your home. Do not allow vines to grow from your yard and up the side of your house. This growth pattern essentially creates a wick leading from fire-prone areas directly to your home.



Table 6. Vines

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Aristolochia macrophylla</i>	Dutchman's Pipe	E		H	Vigorous; low maintenance; urban tolerant; long lived.
<i>Campsis radicans</i>	Trumpet-Creeper, Trumpet Vine	N		H	Showy native; urban tolerant; adapts to various soils.
<i>Celastrus</i> spp.	Bittersweet	N, E		H	Dioecious; tolerates various soils; insect sensitive. Exotic species is invasive.
<i>Clematis virginiana</i>	Virgin's Bower	N		H	Shade intolerant; adapts to a variety of conditions.
<i>Clematis</i> spp.	Garden Clematis	E		H	Fairly fragile; requires support; requires alkaline soils; shade intolerant.
<i>Hydrangea anomala petiolaris</i>	Climbing Hydrangea	E		H	Slow to establish; urban adaptive; becomes large with time.
<i>Lonicera japonica</i>	Japanese Honeysuckle	E		H	Can be used as ground cover; invasive; shade tolerant; urban adaptive.
<i>Lonicera x heckrottii</i>	Goldflame Honeysuckle	E		H	Requires support; not aggressive.
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	N		H	Shade tolerant; will cover walls; tolerates urban conditions.
<i>Parthenocissus tricuspidata</i>	Boston Ivy	E		H	Tolerates urban conditions; naturalizes in urban sites.

Table 6. Vines (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Polygonum aubertii</i>	Silverlace Vine, Fleece Vine	E		H	Very vigorous and adaptable; urban tolerant; tolerates high pH.
<i>Rosa</i> spp.	Climbing Roses	N, E		H	Requires support; shade intolerant; disease and insect sensitive.
<i>Smilax</i> spp.	Greenbrier, Smilax, Catbrier	N		H	Evergreen forms exist; armed; shade tolerant.

* Nativity: E = Exotic; N = Native to Ohio.

** Uses: S = Shade; Sp = Specimen; Sc = Screen; H = Hedge; GC = Ground Cover; F = Foundation.

*** Flammability Rating: VH = Very High; H = High; M = Medium; L = Low; VL = Very Low.

Landscape Perennials

Flowering perennials are a staple in most home landscapes. Generally, flammability is low as foliage has a high water content and low oil content during the growing season. Keep in mind that the spacing and quantity of perennials is key in Firewise Landscaping. Plant an attractive landscape, but be sure to leave enough space between the vegetation and your home to prevent fire spread. Furthermore, the removal of dead material in the late fall will prevent having a ready source of dried fuel in the spring. This is easily done and renders your landscape more fire resistant.



Table 7. Landscape Perennials

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Acanthus mollis</i>	Bear's Breeches	E		L	Long-lived; shrub-like habit; foliage slightly armed.
<i>Aquilegia</i> spp.	Columbine	N, E		L	Disease and insect prone; short lived in mass plantings.
<i>Artemisia</i> spp.	Artemisia	E		H	Some are invasive; drought tolerant; adaptable to various soils.
<i>Asclepias tuberosa</i>	Butterfly Weed	N		L	Drought tolerant; shade intolerant; not well adapted to mass plantings.
<i>Aster</i> spp.	Aster	N		M	Most are old field natives; sun tolerant; some shade tolerance; variable insect pests.
<i>Astilbe</i> spp.	Astilbe	E		L-M	Many are moist woodland plants; drought and sun sensitive.
<i>Begonia</i> spp.	Begonia	E		L	Succulent foliage is fire resistant; prone to mulch-induced nitrogen deficiency.
<i>Canna</i> spp.	Canna	E		L	Large leaves; shade intolerant; tubers are not cold hardy in Ohio.
<i>Coreopsis</i> spp.	Coreopsis	N, E		L-M	Prairie natives are included; sun tolerant; drought tolerant; disease sensitive in mass.

Table 7. Landscape Perennials (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Dianthus</i> spp.	Pinks	E		L	Foliage somewhat succulent; sun tolerant; variable disease sensitivity.
<i>Echinacea purpurea</i>	Purple Coneflower	N		M	Disease sensitive in mass; sun loving; a prairie native.
<i>Epimedium</i> spp.	Bishop's Cap	E		L	Tolerates mass planting under trees; drought tolerant; pest resistant.
<i>Eupatorium purpureum</i>	Joe Pye Weed	N		M	Grows along stream banks; tolerates light shade.
<i>Gaillardia aristata</i>	Blanket Flower	N		L	Drought and sun tolerant; intolerant of moist soils.
<i>Geranium</i> spp.	Cranesbill, Geranium	N, E		L-M	Drought tolerant; sun to shade loving; variable plant sizes.
<i>Helianthus</i> spp.	Sunflower	N, E		L-M	Sun loving; drought tolerant; medium to large upright plants.
<i>Helleborus</i> spp.	Christmas-Rose, Lenten-Rose	E		L	Naturalizes in forest understory; shade tolerant.
<i>Heemerocallis</i> spp.	Daylily	E		L	Has escaped cultivation; urban tolerant; tolerates various soils; resists erosion.
<i>Heuchera</i> spp.	Coralbells	N, E		L	Shade tolerant; grows in forest understory; variably disease resistant; grown for foliage.
<i>Hibiscus</i> spp.	Mallow	N, E		L	Requires moist soil; sun loving; urban tolerant.
<i>Hosta</i> spp.	Hosta	E		L	Tolerates variable moisture; best in partial shade; urban tolerant; variable habit.
<i>Iris</i> spp.	Iris	E, N		L	Variably moist to dry soils; sun loving; urban tolerant.
<i>Liatris</i> spp.	Blazing Star	N		L	Prairie native; drought tolerant; sun to partial shade required.
<i>Lythrum</i> spp.	Loosestrife	E		M	Species and hybrids are seriously invasive in wetlands; sun loving; aggressive.
<i>Mertensia virginica</i>	Virginia Bluebells	N		L	Ephemeral foliage; shade tolerant; tolerates moist soil; forms mass plantings.
<i>Monarda</i> spp.	Bee Balm	N		M	Sun loving; disease defoliation is common; variable moisture tolerance.
<i>Paeonia</i> spp.	Peony	E		L	Sun to light shade; urban tolerant; long-lived; intolerant of wet soils.
<i>Phlox</i> spp.	Phlox	E, N		L	Variably tolerant of shade; variable disease tolerance.
<i>Perovskia atriplicifolia</i>	Russian-Sage	E		H	Drought tolerant; urban tolerant; full sun and good drainage required.
<i>Physostegia virginiana</i>	Obedient Plant	N		L	Tolerates moist to wet soils; urban tolerant; full sun.
<i>Rudbeckia</i> spp.	Coneflower	N		M	Tolerates full sun; variable moisture regimes; some adapt to mass planting.
<i>Salvia</i> spp.	Salvia	E		L-H	Deer-resistant species available; variable soil tolerance; full sun; flammability affected by height.

Table 7. Landscape Perennials (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Sedum</i> spp.	Sedum	N, E		L	Drought tolerant; shade intolerant; fire resistant foliage.
<i>Solidago</i> spp.	Goldenrod	N		M	Mass plantings common; drought tolerant; full sun; allelopathic to many trees.
<i>Tradescantia</i> spp.	Spiderwort	N, E		L	Native in moist soils; sun loving; forms large clumps.
<i>Veronica</i> spp.	Veronica	N, E		L	Full sun; well-drained soil; variable in habit.
<i>Yucca filamentosa</i>	Adam's Needle Yucca	N		L	Drought resistant and generally maintenance free; shade tolerant; urban tolerant.
* Nativity: E = Exotic; N = Native to Ohio.					
** Uses: S = Shade; Sp = Specimen; Sc = Screen; H = Hedge; GC = Ground Cover; F = Foundation.					
*** Flammability Rating: VH = Very High; H = High; M = Medium; L = Low; VL = Very Low.					

Grasses

The typical wildfire season in Ohio is in spring and fall, but dry spells in summer can dry grasses out and facilitate summer wildfires. Ornamental grasses burn very rapidly and with high intensity when the foliage is dry. Strong winds affect fire in grass dramatically; winds can push grass fires to move very rapidly. Grass fires can also change direction without much warning.



To provide for safety, make sure that ornamental grasses around the home are not planted where they can become a ladder for a wildfire. They should be planted no closer than Zones 2 or 3 or beyond. Ornamental grasses should be kept to a minimum in the landscape and well spaced as to not provide large masses of fuel in any one area. If ornamental grasses are used in landscaping, they should be planted as individuals or in smaller groups.

Table 8. Grasses

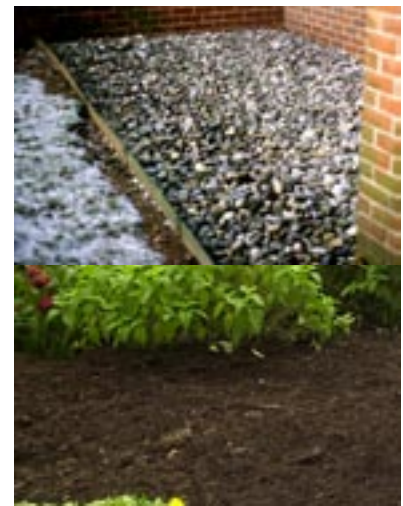
Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Arundo donax</i>	Giant Reed	E		VH	Tall grass; tolerates urban and various soil conditions.
<i>Calamagrostis x acutifolia</i>	Feather Reed Grass	E		VH	Sun tolerant; remains upright through the winter.
<i>Deschampsia caespitosa</i>	Tufted Hair Grass	E		H	Clump forming; tolerant of moist soils and full sun.
<i>Elymus arenarius</i>	Blue Lime Grass	E		VH	Invasive; sun tolerant; tolerates poor soil; spreads by underground stolens.
<i>Festuca</i> spp.	Fescues	E		H	Variable disease tolerance; sun tolerant; tolerates alkaline soil.
<i>Erianthus ravennae</i>	Plume Grass	E		VH	Large clumps; tolerates full sun; needs well-drained soil.

Table 8. Grasses (continued)

Scientific Name	Common Name	Native to Ohio*	Use**	Flammability Rating***	Comments
<i>Imperata cylindrica</i>	Japanese Blood Grass	E		H	Forms colonies; species is invasive but fruitless clones are reported.
<i>Miscanthus</i> spp.	Maiden Grass	E		VH	Forms large clumps; early flowering clones are invasive; full sun.
<i>Panicum virgatum</i>	Switch Grass	N		H	Full sun to light shade; tolerates moist soil; clump forming.
<i>Pennisetum</i> spp.	Fountain Grass	E		H	Clump forming; disease sensitive; tolerates full sun; seedlings are common.
<i>Phlaris arundinacea</i>	Ribbon Grass	E		H	Invasive, especially in moist soils; tolerates full sun.
<i>Phragmites australis</i>	Phragmites Grass	E		VH	Invasive, especially in moist soils; tolerates full sun.
<i>Schizachyrium scoparium</i>	Big Bluestem	N		H	Tolerates full sun; requires good drainage; clump forming.
<i>Spartina pectinata</i>	Cord Grass	N		L	Requires moist soil and full sun; will grow in 6 inches of standing water; salt tolerant.
* Nativity: E = Exotic; N = Native to Ohio.					
** Uses: S = Shade; Sp = Specimen; Sc = Screen; H = Hedge; GC = Ground Cover; F = Foundation.					
*** Flammability Rating: VH = Very High; H = High; M = Medium; L = Low; VL = Very Low.					

Mulches in the Landscape and Their Relationship to Fire

Depending upon the flammability of the type of mulch selected, mulch can help prevent the spread of fire, or it can increase the spread of fire. Mulch can be additional fuel for a fire to build upon, spread fire directly to and under the structure, or act as an ignition point for a wildfire. Cigarettes and matches thrown into fire-prone mulch can start fires, and subsequently destroy structures and surrounding landscapes. This may not be immediate, as the mulch could smolder for several days before reaching the flash point and bursting into flame.



As Table 9 demonstrates, there is a range in ignitability and flammability of mulches commonly used in the landscape. The mulches are listed alphabetically in Table 9.

Table 9. Mulch Flammability

Mulching Material	Flammability Rating
Name	Name
Bluegrass sod	VL
Brick chips	N
Cocoa shells	VL
Composted yard waste	M

Table 9. Mulch Flammability (continued)

Decorative ground rubber	VH
Ground recycled pallets	H
Oat straw	VH
Pine bark nuggets (1 to 2 inch)	L
Pine bark nuggets (1/2 to 1 inch)	L
Pine straw (needles)	VH
Shredded cypress bark	H
Shredded hardwood bark	H
Shredded pine bark	M
Flammability Rating: VH = Very High; H = High; M = Medium; L = Low; VL = Very Low; N = Nonflammable.	

As Table 9 demonstrates, mulches vary greatly in flammability. Inorganic mulches such as gravel or brick, marble, or granite chips are generally nonflammable and act as a firebreak. These kinds of mulches might be particularly useful when used close to structures in Zone 1. In contrast, shredded wood products such as ground pallets are particularly dangerous when used in Zone 1 and even more so if kept dry under overhangs, decks, and other structures.

Note that turf was considered as mulch in Table 9 and demonstrated low flammability. Much of the zoning discussed earlier is using the low flammability of turf to protect property from fire. Turf is useful in Zones 1, 2, or 3.

Particularly variable in respect to flammability are organic mulches. Cocoa shells and pine bark nuggets have very low flammability while pine and oat straw are very flammable. Interestingly, ground rubber can be considered as a manufactured product (inorganic) or as a compound containing carbon (organic). In any event, ground rubber is very flammable and particularly difficult to put out when ignited, and thus should be used with caution.

