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MONTANA STATE UNIVERSITY EXTENSION

MontGuide

Fire-Resistant Plants for Montana Landscapes

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Fires can damage soil and reduce its capacity to hold moisture. This can affect plants' ability to survive. However, there are a number of groundcovers, herbaceous plants, shrubs and trees that are fire-resistant and are listed here.

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ANY PLANT WILL BURN IF IT IS DRY ENOUGH AND the fire slow enough and hot enough. The ability of a plant to survive a fire depends upon the speed and type of fire, the time of year, the moisture-holding capacity of the plant and the plant species.

Slow-moving fires can do more damage than those that move rapidly across a site. In forest settings, crown fires that travel from the crown of one tree to another often are more damaging than other types because they destroy the foliage and thus reduce the plants' capacity to photosynthesize. This inability to manufacture carbohydrates weakens the plant and makes it more susceptible to subsequent winter damage and pest infestations. Young trees are more severely affected by this type of fire than older trees.

Ground fires kill the cambium and phloem (parts of the plant responsible for its growth), often girdling or partially girdling the plant, which can lead to the death of the plant.

However, new tissue laid down in the following spring allows many damaged trees to survive.

Succulent plants and those full of water (for instance, in spring), survive fires better than trees with low moisture contents. Shrubs often survive by their ability to re-sprout from their bases.

Degradation of Site Quality

Fires burn soil organic matter, reducing the soil's capacity to store water and fostering compaction. They accelerate erosion and increase the magnitude of fluctuations in soil temperatures. As much as 70 percent of the nitrogen and some other nutrients are lost by volatilization, ash convection, and subsequent leaching after hot fires. However, the nitrogen is often replaced quickly by rain, increased soil microbial activity, and nitrogen fixation. Some nutrients are also released from burned organic matter, often making the total availability of mineral nutrients to the plants higher after the fire than before. Site quality deteriorates more on coarse sands and heavy soils than on sandy and loamy soils.

Following a fire, prune out dead branches and be sure the remaining plants are watered well. There may be no reason to add huge quantities of fertilizer.

Under forest conditions, tree species with thicker, corky bark -- western larch, ponderosa pine, Douglas fir, long-leaf pine and bur oak -- often escape severe fire damage. Those with thinner bark, such as alpine fir, Engelmann spruce and lodgepole pine, and many younger trees, are more likely to be killed by ground fires. Conifers as a group are considered more susceptible to fire damage than deciduous species because of their high resin content.

Following is a list of plant species adapted to Montana that have been noted to be fire resistant. Not all species on this list will grow in all parts of the state. Refer to *Choosing Trees and Shrubs for Montana Landscapes* (Montana Extension Bulletin EB123), *Choosing Biennials and Perennials for Montana Gardens* (MT199903AG) and *Growing Annual Flowers* (MT199501AG) for more information on growing site conditions for selected species.

We have also avoided categorizing plants as "fast-growing" or "slow-growing" since this can be misleading -- there are too many variables that can affect the rate of growth of a plant. Some information in the tables pertains only to observations on a single cultivar, but there is little reason to believe that other cultivars of the same species might not be equally resistant. In one case, an entire family (Rose) is generally considered to be fire-resistant. This family includes apples, pears, peaches, plums, apricots, nectarines, hawthorn, cotoneaster, juneberry, raspberry, blackberry and, of course, rose. Some entries include an entire genus (ash, for example) followed by some individual species. This is because some references list only a genus while others list particular species as being resistant.

Fire-Resistant Plant Species Adapted to Montana

Groundcovers and Herbaceous Plants

COMMON NAME	GENUS AND SPECIES
Alfalfa	*Medicago sativus*
Bergenia	*Bergenia* spp.
Blanket Flower	*Gaillardia* x *grandiflora*
Bluegrass, Kentucky	*Poa pratensis*
Buffalograss	*Buchloe dactyloides*
Bugleweed	*Ajuga reptans*
Candytuft, Evergreen	*Iberis sempervirens*
Cinquefoil, Spring	*Potentilla tabernaemontani*
Columbine	*Aquilegia* spp.
Coral Bells	*Heuchera sanguinea*
Coreopsis	*Coreopsis* spp.
Cotoneaster, Rock	*Cotoneaster horizontalis*
Cotoneaster, Bearberry	*Cotoneaster dammeri*
Cottage Pink	*Dianthus plumarius*
Daisy, Shasta	*Leucanthemum* x *superbum*
Daylily	*Hemerocallis* spp.
Dusty Miller	*Artemisa stelleriana*
Fescue	*Festuca* spp.
Fescue, Blue	*Festuca ovina* var. *glauca*
Fescue, Tall	*Festuca arundinacea*
Fescue, Creeping Red	*Festuca rubra*
Flax	*Linum* spp.
Fleabane	*Erigeron* hybrids
Four O'clock	*Mirabilis* spp.
Geranium, Bloodred	*Geranium sanguineum*
Geranium	*Geranium* spp.
Ginger, Wild	*Asarum caudatum*
Hen and Chicks	*Sempervivum tectorum*
Iris	*Iris* spp.
Kinnickinnick	*Arctostaphylos uva-ursi*
Lambs Ear	*Stachys byzantina*
Lavender	*Lavandula* spp.
Lupine	*Lupinus* spp.

Fire-Resistant Plant Species Adapted to Montana

Groundcovers and Herbaceous Plants

COMMON NAME	GENUS AND SPECIES
Mahonia, Creeping	*Mahonia repens*
Mock-strawberry	*Duchesnea indica*
Myrtle, Common Periwinkle	*Vinca minor*
Ocean Spray	*Holodiscus* spp.
Orchardgrass	*Dactylis glomerata*
Poppy	*Papaver* spp.
Poppy, California	*Eschscholzia californica*
Potentilla	*Potentilla* spp.
Primrose	*Oenothera* spp.
Pussytoes	*Antennaria* spp.
Red Hot Poker	*Kniphofia uvaria*
Ryegrass	*Lolium* spp.
Sage	*Salvia* spp.
Sedum, Goldmoss	*Sedum acre*
Silver Spreader	*Artemisia caucasica*
Snow-in-Summer	*Cerastium tomentosum*
Stonecrop	*Sedum spathulifolium*
Stonecrop, Green	*Sedum album*
Strawberry, Wild	*Fragraria chiloensis*
Thrift, Common	*Armeria maritima*
Thyme, Wooly	*Thymus pseudolanuginosus*
Valerian, Red	*Centranthus ruber*
Violet, Canadian	*Viola canandensis*
Virginia Creeper	*Parthenocissus quinquefolia*
Wheatgrass, Fairway Western	*Agropyron cristatum*
Winterfat	*Eurotia lanata*
Yarrow	*Achillea* spp.
Yarrow, Common	*Achillea millefolium*
Yarrow, Fernleaf	*Achillea filipendulina*
Yarrow, Wooly	*Achillea tomentosa* var. Moonshine
Yucca	*Yucca filamentosa*

Fire-Resistant Plant Species Adapted to Montana

Shrubs

COMMON NAME	GENUS AND SPECIES
Antelope Brush	*Fendlera rupicola*
Buckthorn	*Rhamnus* spp.
Buffaloberry	*Shepherdia* spp.
Buffaloberry, Russett	*Shepherdia canadensis*
Buffaloberry, Silver	*Shepherdia argentea*
Cherry	*Prunus* spp.
Cherry, Sand	*Prunus besseyi*
Cherry, Nanking	*Prunus tomentosa*
Chokecherry	*Prunus virginiana*
Cinquefoil, Shrubby	*Potentilla fruiticosa* *Pentaphylloides floribunda*
Dogwood, Red-osier	*Cornus sericea (C. stolonifera)*
Gooseberries & Currants	*Ribes* spp.
Honeysuckle	*Lonicera* spp.
Lilac, Common	*Syringa vulgaris*
Mahogany, Mountain	*Cercocarpus* spp.
Mockorange	*Philadelphus* spp.
Plum, Native	*Prunus americana*
Raspberry	*Rubus* spp.
Rose, most members of this family	*Rosaceae*
Sumac, Skunkbush	*Rhus trilobata*

Trees

COMMON NAME	GENUS AND SPECIES
Alder, White	*Alnus rhombifolia*
Ash	*Fraxinus* spp.
Ash, Green	*Fraxinus pennsylvanica*
Aspen, Quaking	*Populus tremuloides*
Birch	*Betula* spp.
Cottonwood	*Populus* spp.
Hackberry	*Celtis occidentalis*
Locust, Black	*Robinia pseudoacacia*
Maple	*Acer* spp.
Maple, Boxelder	*Acer negundo*
Maple, Rocky Mountain	*Acer glabrum*
Olive, Russian	*Eleagnus angustifolia*
Poplar	*Populus* spp.
Narrowleaf Cottonwood	*Populus angustifolia*
Prunus	*Prunus* spp.

http://www.montana.edu/wwwpb/pubs/mt200101AG.pdf

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