



# **Low-Flammability Landscape Plants**

Fact Sheet 6.305 | Wildfire Mitigation Series, Landscaping and Planting

By S. Carter, N. Goeckner, C. Julian (CSFS), L. Langelo, I. Shonle and C. Dennis (Emeritus CSFS) (4/23)

# Introduction

In Colorado, in the wildland-urban interface (WUI), it isn't a matter of if a wildfire will impact residences and properties, but when. The WUI includes any areas where structures and other human developments meet or intermingle with wildland vegetative fuels, including grasses, shrubs and trees. Wildfires are a natural part of Colorado's varied ecosystems. Planning ahead and taking action to reduce the risk of wildfires can increase the likelihood a home survives when wildfires do occur. Firefighters do their best to protect residents, but ultimately, it's your responsibility to protect your property and investments from wildfire.

This fact sheet is a part of a series of three publications created to help homeowners focus on actions that are effective in reducing wildfire hazards on properties. These efforts should always begin with the home or structure itself and progress outward. Defensible space is the area around a home or other structures that has been modified to reduce fire hazards by creating space between potential fuel sources. In the defensible space, natural and man-made fuels are treated, removed or reduced to slow the spread of wildfire and alter fire behavior. Plants that are low flammability are selected for planting, especially closer to the home.

Creating an effective defensible space involves establishing a series of management zones. Develop these zones around each building, including detached garages, storage buildings, barns and other structures. Recognize that fuel continuity and density play a critical role in wildfire behavior. Zones are defined from the structure edge in feet:

- Zone 1: 0-5 feet
- Zone 2: 5-30 feet
- Zone 3: 30-100 feet

This fact sheet covers plants in zones 1 and 2; a different publication; the Fire-Resistant Landscaping fact sheet, discusses plants in zone 3. For a defensible space plan for properties, contact the nearest Colorado State Forest Service field office or local CSU-Extension office for guidance. Consult with a forester, fire department staff or community organization appropriately trained in wildfire mitigation practices.





# **Quick Facts**

- The right plants around structures are important for wildfire safety.
- Management of defensible space and plant types is essential.
- This fact sheet is one of a series of three.
- Plants rated 10 have the least flammability.
- This fact sheet recommends lowflammability plants for zones 1 and 2.
- Refer to the Colorado State Forest Service's Home Ignition Zone guide for further details on home ignition zones.

#### **CSU Extension Staff**

S. Carter - Chaffee County, Director

N. Goeckner - Jefferson County, Natural Resource Specialist

L. Langelo - Golden Plains Area, Horticulture Specialist

I. Shonle, Ph.D. - El Paso County, Horticulture Specialist, Extension Professor

#### Colorado State Forest Service Staff

C. Julian - Wildfire Mitigation Program Specialist C. Dennis - Emeritus CSFS

04/2023

#### extension.colostate.edu

# **Low-Flammability Plant Characteristics**

Recommendations on this list are based on a methodology developed by Idaho Firewise in Boise, Idaho. The methodology rates the flammability of plants based on specific characteristics ranked on a scale of 0-10 with 0 the most flammable and 10 the least flammable. To create the highest degree of protection for structures, the recommendation is to plant only plants with scores of 8.9 and 10 for zones 1 and 2 within the first 30 feet from the home. These species are the least flammable plants to plant near structures, but keep in mind that there are no truly "fireproof" plant species. Existing vegetation with scores below an 8 (indicating more flammability) is addressed in the Fire-Resistant Landscaping fact sheet (6.303). Plants that have lower flammability and are more resistant to wildfire and plants that have a higher flammability and are less resistant to wildfire have these specific characteristics:

#### Attributes that decrease flammability

- Low oil or resin content
- High moisture content
- Soap, latex or pectin content
- Compact growth form
- Green stems
- Drought tolerant

#### Attributes that increase flammability

- High oil or resin content
- Low moisture content
- Tall growth
- Open form
- Fine wood (twiggy) stems
- High water need

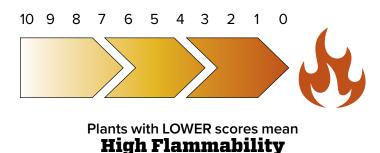
Many plants are highly flammable during different seasons of the year. At such times, left unmanaged, they can accelerate the spread of a wildfire that can harm communities. All vegetation, naturally occurring and otherwise, is potential fuel for fire. Its type, amount and arrangement have a dramatic effect on fire behavior.

There are no "fireproof" plant species. Plant choice, spacing and maintenance are critical to reduce the risk adjacent to the structure. There are many concepts to consider when choosing low-flammability plants. A plant's moisture content is the single most important factor governing its volatility. However, resin content and other factors in some species render them flammable even when the plant is well watered. Conifers tend to be flammable due to their oil and pitch content, regardless of their water content. Deciduous plants tend to be more fire resistant because their leaves have higher moisture content and their basic chemistry is less flammable. Also, when deciduous trees are dormant, there is less fuel to carry fire through their canopies.

In some cases, there is a strong correlation between drought tolerance and fire resistance. These plants offer less fuel or have a higher moisture content, both of which help reduce fire hazard. There also appears to be a correlation between a plant's salt tolerance and natural fire resistance. Plants adapted to salty conditions, and actually growing in salty situations, may better resist burning.

Most of Colorado's native vegetation is adapted to fire and is flammable. Common flammable plants have flammability scores less than 8. Common flammable trees are junipers, pines, firs and spruces. Common flammable shrubs are Gambel oak, three-leaf sumac and mountain mahogany. Planting of these species is discouraged adjacent to the home in defensible space zones 1 and 2. If they're already present, consider replacing them with some of the recommended species included in this fact sheet. If you decide to keep a flammable plant in your landscape, keep it pruned and thinned, remove dead material regularly, and keep it at least 30 feet from any structure or other plants. See the Fire-Resistant Landscaping fact sheet (6.303) for more information on these mitigation measures.

#### Plants with HIGHER scores mean Low Flammability



### **Don't Forget Maintenance**

A landscape is a dynamic, constantly changing system. Plants considered "fire resistant" and that have low amounts of flammable vegetation can lose these characteristics over time. Your landscape, and the plants in it, must be maintained to retain their low-flammability properties. Maintenance is addressed in further detail in the Fire-Resistant Landscaping fact sheet (6.303).

### Supporting Publications from CSU Extension, the Colorado State Forest Service and Idaho Firewise

The following publications are available and are referenced. The CSFS Home Ignition Zone (HIZ) guide describes the concepts of structural ignitability and defensible space. Low-Flammability Landscape Plants (6.305) recommends fire-resistant plants for zones 1 and 2 identified in the defensible space section of the CSFS HIZ guide. Fire-Resistant Landscaping (6.303) recommends design features for zones 1, 2 and 3 and recommends plants with mitigation measure for plants and existing vegetation in zone 3.

The CSFS HIZ guide, Low-Flammability Landscape Plants and Fire-Resistant Landscaping are considered a package that can help with developing actions to reduce wildfire risk and impacts. The Idaho materials provided the basis for the addition of the flammability scoring and approach for this update.

- 1. CSFS Home Ignition Zone Guide, 2021 (Replaces 6.302, Creating Wildfire-Defensible Zones) *https://bit.ly/COHomeIgnitionZone*
- 2. 6.303, Fire-Resistant Landscaping (Updated 2023) https://bit.ly/FireResistantLandscaping
- 1. Idaho Firewise, Fire-Resistant Landscapes – Plant Materials *https://idahofirewise.org/ firewise-landscapes/firewise-plant-materials/*

Colorado State University Extension is an equal opportunity provider. | Colorado State University Extension es un proveedor que ofrece igualdad de oportunidades.



Opuntia (Photo by I. Shonle)



Rocky Mountain Penstemon (Photo by I. Shonle)



Purple Ice Plant (Photo by S. Carter)

KEY				
Water Needs	VL = very low	L = low	M = medium	H = high
Sun/Shade	S = sun	PS = part sun	Sh = shade	Prt Sh = part shade

Native, low-wate	er plants							
Native, low-water f	lowers and ground o	covers						
Scientific Name	Common Name	Approx. Water Needs	Sun/Shade Preference	Approx. Mature Height	Flower Color	Elevation in 1,000' Increments	Approx. Bloom Time	Low Flammability Rating
Achillea Ionulosa, now A. millefolium	common yarrow	L-H	S/PS	1.5-2'	white	5-10 K	Jul	9.5
Allium cernuum	nodding onion	L-H	S/PS	1'	pink/purple	5-10 K	Jun	10
Allium geyeri	Geyer's onion	L-H	S/PS	1'	pink	5-10 K	Jun	10
Antennaria parvifolia	small-leaf pussytoes	м	S/PS	<.5'	creamy white	5-10 K	Jun	8
Antennaria rosea	rosy pussytoes	м	S/PS	<.5'	rose	5-10 K	Jun	8
Aquilegia chrysantha	golden columbine	М-Н	S/PS	1-2'	yellow	5-10 K	Jun-Aug	8
Asclepias tuberosa	common butterfly weed	L	S	1-2'	orange	5-6 K	Summer	8
Symphyotrichum (f. Aster) laeve	smooth aster	L-H	S/PS	1-3'	blue/ lavender	5-10 K	Aug-Sep	8
Symphyotrichum (f. Aster) porteri	porter aster	L-M	S	1'	white	5-10 K	Aug-Sep	8
Astragalus utahensis	Utah milkvetch	L	S	.5'	pink/purple	5-6 K	Spring	8
Callirhoe involucrata	poppy mallow	L	S	5"	pink/white	5-8 K	Summer	8
Calochortus gunnisonii	Gunnison's mariposa lily	М-Н	S	.5-2'	white	5-10 K	Jul-Aug	8
Campanula rotundifolia	harebell; bluebells of Scotland	М-Н	S	.5-1'	blue	5-10 K	May-Oct	9.5
Claytonia Ianceolata	western spring beauty	м	Sh	.5-1.5'	white	5-10 K	Mar-Apr	9.5
Coreopsis tinctoria	plains coreopsis	L-M	S	2.5-3'	yellow	5-9 K	Summer	8
Erysimum capitatum	western wallflower	м	S/PS	1'+	yellow	5-10 K	Jun-Jul	9
Gaillardia aristata	blanketflower	L-M	S	1-1.5'	yellow- reddish	5-10 K	Jul-Sep	8
Galium boreale	northern bedstraw	М-Н	Sh	<1'	white	5-10 K	May-Jun	8
Geranium caespitosum	Rocky Mountain geranium	м	Sh/PS	2'	pink/purple/ white	5-10 K	May-Oct	8
Geum triflorum	prairie smoke	М-Н	S/PS	1.5'	reddish pink	5-10 K	Jun	8
Leucocrinum montanum	sand lily	L-M	S	<1'	white	5-8 K	May	10
Linum lewisii	Lewis or blue flax	L	s	2.5'	blue	5-8 K	Late Spring- Early Summer	8
Lupinus argenteus	silvery lupine	м	Sh/PS	1-3'	blue	5-10 K	Jun-Jul	8
Mertensia Ianceolata	prairie bluebell	м	Sh/PS	1-2'	blue	5-10 K	May-Jun	10

Scientific Name	Common Name	Approx. Water Needs	Sun/Shade Preference	Approx. Mature Height	Flower Color	Elevation in 1,000' Increments	Approx. Bloom Time	Low Flammability Rating			
Native, low-water flowers and ground covers cont.											
Oenothera speciosa	evening primrose	L-M	S	1-1.5'	white-pink	4-7 K	May-Jul	8			
Penstemon caespitosus	mat penstemon	L-M	S	<.5'	purple	5-10 K	Jun	8			
Penstemon secundiflorus	sidebells penstemon	L-M	S	1-2'	blue/violet/ pink	5-9 K	May-Jun	8			
Penstemon teucrioides	germander beardtongue	L-M	S	.5'	purple/ violet	5-10 K	Jun-Jul	8			
Penstemon spp.	penstemon species, cultivars	L-M	S	1-2.5'	blue/purple/ violet	5-9 K	Summer	8			
Penstemon strictus	Rocky Mountain penstemon	L-M	S	2-2.5'	purple/ violet	5-10 K	May-Jul	8			
Penstemon virens	Front Range beardtongue	м	S/PS	.5'	blue	5-10 K	May-Jun	8			
Sedum lanceolatum	yellow stonecrop	м	S/PS	.5'	yellow	5-10 K	Jul-Aug	10			
Thermopsis rhombifolia var. divaricarpa	spreadfruit golden banner	M-H	S/PS	2'	yellow	5-10 K	Мау	8			

Native, low-water s	hrubs, trees and ca	cti						
Amelanchier alnifolia v. utahensis	Utah serviceberry	VL-M	S	4-6'	white	5-7 K	Мау	7.5
Cylindropuntia spp.	Cholla	VL-M	S	3-5'	pink	5-6 K	Jun	8
Opuntia spp.	prickly pear	VL	S	.5-1'	yellow/pink	5-7.5 K	May	10
Philadelphus lewisii	Cheyenne mock orange	м	S	2-3'	white	5-9 K	Jun	8
Populus tremuloides	aspen	м	S	8-25'	catkins	5-10 K	n/a	9
Rhus glabra	smooth sumac	L	S	3-5'	yellow	5-8 K	Apr	8
Rhus trilobata 'Autumn Amber'	Autumn Amber sumac	L	S/PS	1'	yellow	5-7.5 K	Apr	8
Symphoricarpos albus	snowberry	м	S/PS	2-3'	white/pink	5-9 K	n/a	8
Yucca baccata	banana yucca	VL-L	S/PS	2-3'	white	5-6 K	Jun	8
Yucca glauca	soapweed, Great Plains yucca	VL-L	S/PS	2-3'	white	5-7 K	Jun	8

Non-native, low-	water plants										
Non-native, low-water flowers and ground covers											
Aegopodium podagraria "Variegatum"	variegated bishop's weed, goutweed	м	S/PS	8"	white	5-8 K	not showy	8			
Ajuga reptans	bugleweed	н	Sh	<.5'	blue	5-10 K	Jun-Jul	8			
Alchemilla mollis	Lady's mantle	M-H	PS/Sh	1'	yellow	5-9 K	Jun-Jul	8			
Arabis spp.	rockcress	L-H	s	<1'	white	5-10 K	May-Jun	8			
Armeria maritima	sea thrift	L-H	S/PS	.5'	white	5-10 K	Apr-Jun	8			
Aubrieta spp.	false rockcress	м	S	1'	pink/white/ purple	5-9 K	Apr-May	8			
Aurinia saxatilis	basket of gold	М	S/PS	1'	yellow	5-9 K	Apr-May	8			

Scientific Name	Common Name	Approx. Water Needs	Sun/Shade Preference	Approx. Mature Height	Flower Color	Elevation in 1,000' Increments	Approx. Bloom Time	Low Flammability Rating
Non-native, low-wa	ater flowers and gro	und cove	ers cont.					
Bergenia cordifolia	heartleaf bergenia, pigsqueak	М	PS/Sh	1'	pink/purple	5-9 K	Spring	8
Centranthus ruber	Jupiter's beard	L-H	S/Sh	2-2.5'	red	5-9 K	May-Oct	10
Cerastium alpinum v. lanthanum	alpine mouse-ear	м	S/PS	1'	white	5-10 K	May-Jun	8
Cerastium tomentosum	snow-in-summer	L-M	S/PS	1'	white	5-9 K	May-Jun	8
Ceratostigma plumbaginoides	plumbago	L	S/Sh	.5'	blue	5-6 K	Fall	8
Convallaria majalis	Lily-of-the-valley	н	Sh	<1'	white	5-9 K	May-Jun	8
Coreopsis spp.	tickseed, coreopsis	м	S	1.5-2'	yellow	5-8 K	Summer	8
Delosperma nubigenum	hardy yellow ice plant	М-Н	S	.5'	chartruese- yellow	5-8 K	Jun	10
Delosperma spp.	ice plant	L	S	1.5-2'	yellow	varies	Spring	10
Dianthus spp.	pink	L-H	S	<.5'-2'	pink	5-10 K	May-Aug	9
Diascia integerrima 'Coral Canyon'	Coral Canyon twinspur	М	S/Prt Sh	1-1.5'	rose-pink	4-7 K	Summer	9
Doronicum spp.	Leopard's bane	н	S/PS	2-3'	yellow	5-9 K	Jul-Aug	10
Echeveria spp.	hens-n-chicks	L	S/Prt Sh	1-2'	varies	5-9 K	Summer	8
Ephedra regeliana	Regel's jointfir	L	S	6-12"	yellow	5-12 K	Spring	8
Erysimum linifolium	wallflower	L	S	1-3'	varies	4.5-12 K	Spring- Summer	9
Euonymus fortunei	winter creeper	м	S/Prt Sh	3'	green-white	4.5-8 K	Spring	8
Euphorbia polychroma	cushion spurge	L	S	12-18'	yellow	5-8 K	Spring	10
Euphorbia × martini 'Mini Martini'	Martini's spurge	L-H	S	1.5-2'	chartruese	4-6 K	Late Spring	10
Fragariaspp.	wild strawberries	м	S/Prt Sh	.2575"	white	5-11 K	Summer	9
Geranium spp.	hardy geraniums	м	Sh/PS	2'	blue/pink/ purple/ white	5-10 K	May-Oct	8
Helianthemum nummularium	rockrose, sunrose	M-H	S	<1'	pink	5-8 K	May-Jun	8
Hemerocallis sp.	daylilies	L-M	S/PS	1-3'	yellow/red/ orange	5-7.5 K	Summer	10
Iberis sempervirens 'Little Gem'	Little Gem evergreen	М	S	.5-1'	white	4.5-9 K	Spring	8
Iris germanica	bearded iris	L-M	S	1-3'	numerous colors	5-10 K	May-Jun	8
Kniphofia uvaria	red hot poker	L	S	3'	red/yellow	5-6 K	Summer	8
Lamium spp.	spotted deadnettle	М-Н	Sh	<1'	white/ purple/pink	5-10 K	May-Jun	8
Lilium spp.	lilies	м	S/Prt Sh	1-8'	varies	4-6.5 K	Summer	10
Lupinus spp.	lupine	L-M	S/PS	2-3'	lavender blue	5-10 K	Summer	8
Marrubium rotundifolium	silver-edged horehound	VL-L	S	1.5-2.5'	white	5-6 K	Early Summer	8

Scientific Name	Common Name	Approx. Water Needs	Sun/Shade Preference	Approx. Mature Height	Flower Color	Elevation in 1,000' Increments	Approx. Bloom Time	Low Flammability Rating
Non-native, low-wa	ater flowers and gro	und cove	ers cont.					
Muscari armeniacum	grape hyacinth	м	S/PS	6-9"	blue	4.5-10 K	Spring	10
Nierembergia gracilis 'Starry Eyes'	Starry Eyes' cupflower	М	S	10"	purple (lt. lav.)	4.5-5.5 K	Summer/ Late Summer	8
Nierembergia repens	creeping white cup	М-Н	S/PS	2-4"	white	4.5-5.5 K	July-Sep	8
Oenothera berlandieri	Berlander's sundrop	L-M	S	1'	yellow	4.5-6.5 K	Early Summer- Fall	8
Pachysandra terminalis 'Green Sheen'	Green Sheen pachysandra	M-H	Sh	6-8"	white	4-8 K	April-May	8
Papaver orientale	Oriental poppy	н	S/Sh	2-3'	orange/ pink/red	5-10 K	May-Jun	9
Polemonium spp.	Jacobs ladder	н	S/PS	1-2'	blue/white	5-10 K	May-Aug	8
Polygonatum commutatum	great Soloman's seal	М-Н	PS/Sh	2'	white	4-10 K	May-Jun	8
Salvia officinalis	common or garden sage	L-M	S/PS	2'	blue- lavender/ pink/ lavender	5-8 K	Jun	7.5
Saxifraga hirsuta	saxifrage	н	S/PS	.5'+	white	5-10 K	May-Jun	8
Scutellaria alpina'Moonbeam'	alpine skullcap	м	S/PS	.5-1'	white/ purple	4-8 K	May	8
Sedum spp.	stonecrop	м	S/PS	1-1.5'	yellow	5-10 K	Jul-Aug	10
Sempervivum spp.	hens and chicks, houseleeks	L-M	S/PS	.5'	pink	5-10 K	n/a	10
Solidago sphacelata 'Golden Fleece'	Golden Fleece goldenrod	VL-M	S	1-1.5'	yellow	4-8 K	Aug-Sep	8
Thymus serpyllum 'Minus'	Elfin thyme	L	S	1-3"	pink	4-10 K	Early-Late Summer	8
Trifolium spp.	clover	м	S/PS	1-2'	white/ purple/pink	varies/spp.	varies: May-Oct	8
Veronica pectinata	woolly creeping speedwall	L-M	S	<.5'	blue	5-9 K	Apr-Jul	8
Vinca minor	common periwinkle	н	Sh	<1'	white	5-10 K	Apr-Jun	8
Waldsteinia spp.	Barren strawberry	М-Н	Sh/PS	<1'	yellow	5-9 K	May-Jun	8

Non-native, low-water trees and shrubs									
Berberis thunbergii 'Atropurpurea Nana'	crimson pygmy Japanese barberry	М	S	2-3'	yellow	5-7.5 K	Spring	8	
Ceanothus americanus	New Jersey tea' ceanothus	М	S/PS	2-3'	white	5-7.5 K	Summer	8	
Lonicera tatarica	Tatarian honeysuckle	м	S/PS	4-6'	white/pink	5-10 K	May-Jun	8	
Malus spp.	crabapple	м	S	10-15'	pink/white	5-9 K	Apr-May	8	
Yucca filamentosa	Adam's needle	М	S/PS	2-3'	white	5-8 K	Jun	8	

Scientific Name	Common Name	Approx. Water Needs	Sun/Shade Preference	Approx. Mature Height	Flower Color	Elevation in 1,000' Increments	Approx. Bloom Time	Low Flammability Rating			
Turf grasses	Turf grasses										
Bouteloua dactyloides	buffalograss	L	S	mow to 2"	n/a	5-6.5 K	n/a	9			
Bouteloua gracilis	blue grama	L	S	mow to 2"	n/a	4.5-7.5 K	n/a	9			
Festuca ovina	sheep fescue	м	S	mow to 2"	n/a	5-9 K	n/a	9			
Lolium perenne	perennial ryegrass	м	S	mow to 2"	n/a	5-8 K	n/a	10			
Poa compressa	Canada bluegrass	м	S	mow to 2"	n/a	5-8 K	n/a	9			
Poa pratensis	Kentucky bluegrass	м	S	mow to 2"	n/a	5-9 K	n/a	10			

#### Low-flammability plants with higher water needs

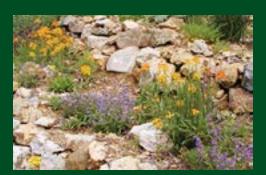
	, p							
Aconitum columbianum	Columbian monkshood	М-Н	S	2'	blue/purple	5-10 K	Jun-Jul	7.5
Aconitum spp.	monkshood	М-Н	S	2'	blue/purple	5-10 K	Jun-Jul	7.5
Aquilegia caerulea	Colorado blue columbine	М-Н	S/PS	1-2'	blue-lav./ white	5-10 K	Jun-Jul	8
Aquilegia spp.	columbine	M-H	S/PS	1-2'	varies	5-10 K	Jun-Jul	8
Corylus cornuta	beaked hazelnut	н	S/Sh	5-6'	yellow- brown	5-7.5 K	inconspicuous	8
Hosta spp.	hosta	М-Н	PS	2-3'	varies	varies	Summer-Fall	8
lris missouriensis	Missouri or native iris	М-Н	S	1-2'	violet blue	5-10 K	Мау	9.5



Blue Grama Grass © Larry Allain. USGS NWRC @ USDA-NRCS PLANTS Database



Geranium and Rocky Mountain Columbine (Photo by I. Shonle)



Wallflowers and Blue Mist Penstemons (Photo by I. Shonle)



# COLORADO STATE UNIVERSITY EXTENSION

Colorado State University Extension State Administration Office Campus Delivery 4040 Fort Collins, CO 80523-4040



5060 Campus Delivery Fort Collins, CO 80523-5060 970-491-6303 csfs.colostate.edu

