ARIZONA COOPERATIVE EXTENSION
THE UNIVERSITY OF ARIZONA
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FIREWISE Plant Materials for 3,000 ft. and Higher Elevations

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Introduction

Creating defensible space around your home is one of the most important and effective steps you can take to protect you, your family, and your home from catastrophic wildfire. Defensible space is the area between a structure and an oncoming wildfire (or between a burning structure and wildland vegetation) where nearby vegetation has been modified to reduce a wildfire's intensity and ability to spread.

All vegetation, naturally occurring and otherwise, is potential fuel for fire. Its type, amount and arrangement can have dramatic effects on fire behavior. There are no "fireproof" plant species. Plant choice, spacing and maintenance are critical; where and how you plant can be more important than what species you use. However, given options, choose plant species for your landscape that are more fire resistant.

Choosing FIREWISE Plants

Keep in mind these general concepts when choosing FIREWISE plant species for your home landscape plan:

- A plant's moisture content is the most important factor governing its volatility. However, resin content and other factors in some species keep them flammable even when the plant is well watered. Conifers such as pines, firs, spruces, junipers, and Arizona cypress tend to be flammable due their oil and pitch content, regardless of moisture status or content.
- Deciduous plants tend to be more fire resistant, because their leaves have higher moisture content. Also, when trees drop their leaves in the winter, there is less fuel to carry fire through their canopies.

In some cases, drought tolerance and fire resistance are related. Here are some general plant characteristics that can provide drought tolerance and increase fire resistance in your landscape:

- Drought-adapted plants that have smaller leaves or very succulent leaves that store water.
- Salt tolerant plants that show natural fire resistance. A notable exception is salt cedar, which is highly salt tolerant but contains extremely volatile oils and burns very hot.

Plants that are more resistant to wildfire have one or more of the following characteristics:

- They grow without accumulating large amounts of combustible dead branches, needles, or leaves (e.g. aspen).
- They have open, loose branches with a low volume of total vegetation (e.g. currant and mountain mahogany).
- They have low resin content (many deciduous species).
- They have high-moisture content (succulents and some herbaceous plants).
- They grow slowly and do not need frequent pruning.
- They are short and grow close to the ground, such as small wildflowers and non-coniferous groundcovers.
- They can re-establish following a fire, reducing the costs of planting new trees (aspen, locust).

At a Glance

- FIREWISE landscaping can be aesthetically pleasing while reducing potential wildfire fuel.
- Plant choice, spacing, and maintenance are critical.
- Your landscape, and the plants in it, must be maintained to retain their FIREWISE properties.
- Many native and local species are appropriate for FIREWISE plant materials.

FIREWISE Trees

Scientific Name	Common Name	Water Needs	Sun / Shade	Mature Height	Elevation (1000')						
					3	4	5	6	7	8	9
Acer glabrum	Rocky Mountain maple	M-H	S/PS/Sh	6-10	N	N	Y	Y	Y	Y	Y
Acer grandidentatum	big-tooth maple	M-H	S/PS	10-20	N	Y	Y	Y	Y	Y	Y
Acer ginnala	amur maple	M	S/PS	15-20	N	Y	Y	Y	Y	Y	Y
Acer negundo	boxelder	H	S/PS/Sh	30-50	Y	Y	Y	Y	Y	Y	N
Alnus tenuifolia	thin leaf alder	H	S/PS	10-20	N	?	Y	Y	Y	Y	Y
Betula occidentalis	water birch	M	S/PS/Sh	20-30	N	N	Y	Y	Y	Y	N
Catalpa speciosa	northern catalpa	M-H	S/PS	25-60	?	Y	Y	Y	Y	?	?
Celtis reticulata	netleaf hackberry	L-M	S	10-20	Y	Y	Y	Y	Y	N	N
Cotinus coggyria	purple smoketree	M	S	20-30	?	N	Y	Y	Y	?	?
Crataegus oxyacantha	English hawthorn	M-H	S	20-25	?	Y	Y	Y	Y	?	N
Forestiera pubescens	New Mexican olive	L-M	S/PS	10-20	Y	Y	Y	Y	Y	N	N
Fraxinus pennsylvanica	green ash	M-H	S	30-40	N	N	N	Y	Y	Y	N
Gleditsia tricanthos	honeylocust	M	S	35-70	Y	Y	Y	Y	Y	N	N
Juglans major	Arizona walnut	M-H	S	20-40	Y	Y	Y	Y	Y	N	N
Malus spp.	crabapple	M-H	S	8-30	Y	Y	Y	Y	Y	Y	?
Platanus x acerifolia	sycamore or London planetree	M-H	S	20-80	?	?	Y	Y	Y	Y	?
Populus acuminata	lanceleaf cottonwood	H	S	40-70	Y	Y	Y	Y	Y	Y	N
Populus angustifolia	narrow-leaf cottonwood	H	S	30-90	N	Y	Y	Y	Y	Y	Y
Populus tremuloides	quaking aspen	H	S	20-60	N	N	N	Y	Y	Y	Y
Prunus americana	American wild plum	M	S/PS	10-20	Y	Y	Y	Y	Y	Y	?
Prunus virginiana	western chokecherry	H	S/PS	10-30	N	Y	Y	Y	Y	Y	N
Prunus padus	mayday tree	M-H	S	15-29	N	N	Y	Y	Y	Y	N
Robinia neomexicana	New Mexico locust	L	S/PS	10-20	Y	Y	Y	Y	Y	Y	N
Robinia pseudoacacia	black locust	L	S/PS	50-75	Y	Y	Y	Y	Y	Y	N
Sambucus nigra	mexican elder/blue elderberry	M	S/PS	10-20	N	Y	Y	Y	Y	Y	Y

Grasses

Scientific Name	Common Name	Seeding Rate (lbs/ acre)	Water Needs	Cool/ Warm Season	Sun/ Shade	Mature Height (feet)	Elevation (1000')						
							3	4	5	6	7	8	9
Achnatherum hymenoides	Indian ricegrass	5	9- 13"	Cool	S	1-2, B	Y	Y	Y	Y	Y	N	N
Agropyron smithii	western wheatgrass	10	11 - 17"	Cool	S	1-2, S	N	Y	Y	Y	Y	N	N
Bouteloua curtipendula	sideoats grama	3-4	12 - 16"	Warm	S	2-3, B	Y	Y	Y	Y	Y	N	N

Sun/Shade: S = full sun, PS = partial sun, Sh = shade
Mature Height: feet, B = bunchgrass, S = sod forming
Water Needs: VL = very low, L = low, M = moderate, H = high
Elevation in 1000': Y = yes, N = not recommended, ? = unknown or doubtful

Grasses (cont'd)

Scientific Name	Common Name	Seeding Rate (lbs/ acre)	Water Needs	Cool/ Warm Season	Sun/ Shade	Mature Height (feet)	Elevation (1000') 3	4	5	6	7	8	9
Bouteloua dactyloides	buffalograss	3-4	12 - 16"	Warm	S	1, S	Y	Y	Y	N	N	N	N
Bouteloua gracilis	blue grama	4-8	VL-L	Warm	S	1, S	N	Y	Y	Y	Y	Y	N
Elymus elymoides	bottlebrush squirreltail	8-10	VL-L	Cool	S-PS	1-2, B	Y	Y	Y	Y	Y	Y	Y
Festuca arizonica	Arizona fescue	3	VL-L	Cool	S-PS	2-3, B	N	N	N	N	Y	Y	Y
Hesperostipa comata	needle-and-thread	8	VL-L	Cool	S	1-2, B	Y	Y	Y	Y	Y	Y	N
Hilaria jamesii	galleta grass	3-4	9-12"	Warm	S	1-2, B	Y	Y	Y	Y	Y	N	N
Koeleria macrantha	Junegrass	1-2	VL-L	Cool	S-PS	1-2, B	N	Y	Y	Y	Y	Y	Y
Leptochloa dubia	green sprangletop	6	L	Warm	S	1-2, B	Y	Y	Y	Y	Y	N	N
Muhlenbergia rigens	deergrass	1-2	L-M	Warm	S	2-5, B	Y	Y	Y	Y	Y	Y	N
Muhlenbergia wrightii	spike muhly	2	12 - 16"	Warm	S	1-2, B	Y	Y	Y	Y	Y	Y	Y
Poa fendleriana	muttongrass	1-2	VL-L	Cool	PS	1-2, B	Y	Y	Y	Y	Y	Y	Y
Sporobolus cryptandrus	sand dropseed	2	VL-L	Warm	S	2-3, B	Y	Y	Y	Y	Y	N	N
Stipa hymenoides	Indian ricegrass	5	9 - 13"	Cool	S	1-2, B	Y	Y	Y	Y	Y	N	N

FIREWISE Shrubs

Scientific Name	Common Name	Water Needs	Sun / Shade	Mature Height	Elevation (1000') 3	4	5	6	7	8	9
Acer glabrum	Rocky Mountain maple	M-H	S/PS/Sh	6-10	N	N	Y	Y	Y	Y	Y
Agave parryi	mescal/Parry's agave	VL	S	2-12	N	Y	Y	Y	Y	Y	N
Amelanchier alnifolia	Saskatoon alder-leaf / serviceberry	L-M	S	6-15	N	Y	Y	Y	Y	Y	Y
Amelanchier utahensis	Utah serviceberry	VL-M	S	5-10	Y	Y	Y	Y	Y	N	N
Amorpha fruticosa	false indigo, indigobush	M-H	S/PS	2-3	Y	Y	Y	Y	Y	N	N
Arctostaphylos uva-ursi	kinnikinnick, bearberry	M-H	PS/Sh	1-2	N	N	N	N	Y	Y	Y
Atriplex canescens	four-wing saltbrush	L	S	3-6	Y	Y	Y	Y	Y	N	N
Berberis fremontii	Fremont's mahonia	L	S	6-8	Y	Y	Y	Y	Y	N	N
Berberis repens	creeping barberry/creeping mahonia	L-H	S/Sh	1-2	?	Y	Y	Y	Y	Y	Y
Ceanothos fendleri	buckbush, Fendler's ceanothus	M	S	2	N	N	Y	Y	Y	Y	Y
Cercocarpus intricatus	dwarf mountain mahogany	VL-L	S	4-6	?	?	Y	Y	Y	?	N
Cercocarus montanus	mountain mahogany	L-M	S/PS	6-8	N	Y	Y	Y	Y	N	N
Chrysothamnus spp.	rabbitbrush	VL-L	S	2-4	Y	Y	Y	Y	Y	Y	Y
Cornus sericea	red osier dogwood	H	S/Sh	4-6	N	Y	Y	Y	Y	Y	Y
Dasiphora fruticosa	shrubby cinquefoil	M	S/PS	2-3	N	N	N	Y	Y	Y	Y
Fallugia paradoxa	Apache plume	VL-L	S	2-4	Y	Y	Y	Y	Y	Y	N
Fendlera rupicola	cliff fendlerbush	L-M	S/PS	4-6	Y	Y	Y	Y	Y	N	N
Holodiscus dumosus	ocean spray/ rock cliff/ rock spirea	L-M	S/PS	4	N	N	Y	Y	Y	Y	Y
Lonicera involucrata	twin-berry/bearberry honeysuckle	M-H	PS/Sh	4	N	N	N	N	Y	Y	Y
Nolina microcarpa	beargrass/sacahuista	VL-L	S	3	Y	Y	Y	Y	N	N	N
Opuntia spp.	cholla and prickly pear cactus	VL-L	S	3	Y	Y	Y	Y	Y	N	N

FIREWISE Shrubs (cont'd)

Scientific Name	Common Name	Water Needs	Sun / Shade	Mature Height	Elevation (1000') 3	4	5	6	7	8	9
Penstemon ambiguus	sand penstemon	VL-L	S	1-3	Y	Y	Y	Y	N	N	N
Physocarpus monogynus	mountain ninebark	M	S/Sh	2-4	N	N	N	N	N	Y	Y
Ribes aureum	golden currant	M	S/PS	2-3	N	Y	Y	Y	Y	N	N
Rosa woodsii	Wood's wild rose	M	S/PS	2-3	N	N	Y	Y	Y	Y	Y
Shepherdia argentea	silver buffaloberry	M	S/PS	10-15	?	?	Y	Y	N	N	N
Symphoricarpos spp.	snowberry	M-H	S/PS	2-3	Y	Y	Y	Y	Y	Y	Y
Syringa vulgaris	common lilac	M	S	6-8	Y	Y	Y	Y	Y	Y	Y
Yucca baccata	banana yucca	VL-L	S	2-3	Y	Y	Y	Y	Y	N	N
Yucca elata	soaptree yucca	VL-L	S	3-15	Y	Y	Y	Y	N	N	N
Yucca glauca	Great Plains yucca	VL-L	S	2-3	Y	Y	Y	Y	Y	Y	N

Sun/Shade: S = full sun, PS = partial sun, Sh = shade
Mature Height: feet, B = bunchgrass, S = sod forming
Water Needs: VL = very low, L = low, M = moderate, H = high
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Designing the Landscape

When planning a FIREWISE landscape consider the following:

- The plants nearest your home should be more widely spaced and smaller than those farther away. Landscape according to the recommended defensible-space zones.
- Choose plants of high moisture content and low potential for flammability in particular, and remove and avoid highly resinous plants in this area.
- Plant in small, irregular clusters and islands, not in largemasses.
- Break up the continuity of the vegetation with decorative rock, gravel, and stepping stone pathways. This will slow the spread of fire across your property
- Use a variety of plant species to support a mixed and healthy landscape. Diversity of plants in the landscape will result in fewer insects and diseases and will better resist catastrophic fires.

Don't Forget Maintenance

A landscape is a dynamic, constantly changing system. Your landscape and the plants in it must be maintained to retain their FIREWISE properties.

- Rake up and dispose of excess litter as it builds up over the season.
- Remove annual plants after they have gone to seed or when the stems dry out.
- Remove any damaged plant parts. Timely pruning is critical. It reduces fuel volume and maintains healthier plants with more succulent, vigorous growth.
- Mow or trim grasses to a low height within your defensible space. Keep grass shortest in the inner part of your defensible space and no more than 6 inches high in the outer portions.
- Be particularly vigilant with maintenance activities during seasons of high fire danger.
- Use mulch to conserve moisture and reduce weed growth. Mulch can be organic (wood chips or small bark pieces) or inorganic (gravel or rock). Avoid pine bark, thick layers of pine needles or other materials that can easily catch fire.
- In the event of drought and water rationing, prioritize the plants you wish to save. Provide supplemental water to those nearest your home.
- Water trees and other plants during the winter dry periods, before water rationing becomes necessary in the summer.

List of Fire Resistant Plant Materials for Arizona

The list of trees and shrubs in this bulletin are plants that are known to have fire resistant characteristics. No annual, biennial, or perennial flowers are listed; however, most do have fire resistant characteristics. Given the arid climate of

Arizona and the fact that some of the species listed have higher water requirements, homeowners are encouraged to work closely with their county extension agent or a local plant materials specialist in selecting plants for use in their home landscape.

The listed grasses may also be used to reduce erosion or as landscape plants.

This publication is based on and borrowed heavily from publications titled "FIREWISE Plant Materials" by Chuck Dennis of the Colorado State Forest Service, Colorado State University and also by New Mexico State University Cooperative Extension Service. FIREWISE is a multi-agency program that encourages the development of defensible space and the prevention of catastrophic wildfire.

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