



United States Department of Agriculture



Conservation Trees and Shrubs for Wyoming



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TABLE OF CONTENTS

Acknowledgements	3
Introduction: Conservation Tree and Shrub Guide for Wyoming	4
Additional Considerations That Can Lead to Decline in Trees and Shrubs in Wyoming.	5
PART I: Tree and Shrub Species General Information	7
Deciduous Trees	7
Shrubs	15
Conifers	27
Part II: Wyoming Conservation Tree and Shrub Planting Zones	32
Part III: Tree and Shrub Species Characteristics	35
Part IV: Wyoming Conservation Tree and Shrub Groups (CTSG)	39
Part V: Adapted Tree and Shrub Species	45
Planting Zone 1.	45
Planting Zone 2	48
Planting Zone 3	51
Planting Zone 4	54
Planting Zone 5	57
Planting Zone 6	60
Citations	63

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INTRODUCTION: Conservation Tree and Shrub Guide for Wyoming

This guide is designed as an aid for planting trees and shrubs in Wyoming. Wyoming has very diverse climates with harsh growing conditions. Understanding which species of trees and shrubs can grow in a given soil, site, and climatic conditions is critical to the success of a tree and shrub planting.

This guide focuses on identifying the following: benefits and growth habit of specific tree and shrub species, species specific to planting zones in Wyoming, identifying specific species characteristics, and tree and shrub adaptations to soil and climatic conditions.



Part I: Tree and Shrub Species General Information

This section focuses on several species-specific characteristics and provides photographs for visual aid. Wildlife value, disease, growth habit, and common uses are identified in this section. Many of the photos used in this section come from USDA, NRCS. 2021. The PLANTS Database (<http://plants.usda.gov>). National Plant Data Team, Greensboro, NC USA.

Part II: Wyoming Conservation Tree and Shrub Planting Zones

Wyoming has diverse climate and geology resulting in soils and vegetation that are specific to the area. Wyoming planting zones are defined primarily based on the Major Land Resource Area (MLRA) boundaries. More information on the MLRAs can be viewed by downloading [USDA Handbook 296 \(https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051845.pdf\)](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051845.pdf). Planting zones typically have a fairly wide range of precipitation and temperature. For a successful tree or shrub planting, it is critical to know the site-specific climatic regime. This section also contains the USDA Plant Hardiness Zone Map.

Part III: Tree and Shrub Species Characteristics

Wyoming has harsh soil and climatic conditions. This section identifies critical tolerances such as minimum precipitation, drought, saline/alkali, calcium carbonate (lime), and flooding tolerances for each species. It also identifies whether or not a species is native to Wyoming, growth rate, and tree heights. The information on this section was primarily derived from the USDA plants database (<https://plants.sc.egov.usda.gov/java/>) as well as USFS Fire Effects Information System (<https://www.feis-crs.org/feis/>) documents.

Part IV: Conservation Tree and Shrub Groups (CTSG)

This section describes the CTSG specific soil characteristics that are used in assigning soil components. A CTSG is a physiographic unit or area having similar climatic and edaphic characteristics that control the selection and height of growth of trees and shrubs (USDA-NRCS National Forestry Manual, 1998). CTSG are calculated in the National Soil Information System (NASIS) using a national calculation. CTSG reports for soil components are generated using Web Soil Survey (<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>). Soil Surveys are typically developed at a scale that may not be adequate for site specific tree plantings. Please consult your local NRCS field office if there are any site-specific concerns regarding CTSG. -Note that for Groups 1 and 2, precipitation is less critical because there is a high-water table present and plants are supplied with adequate moisture in the root zone for growth and survival.



Groups 3 through 9 are considered upland CTSGs and are restricted by climate. Group 10 is considered unsuited due to one or more soil properties that are severely limiting to plant growth. Group 10 soils may require an on-site investigation by a soil scientist.

Part V: Adapted Tree and Shrub Species

This section is split into the six Wyoming planting zones. The soil component data from Web Soil Survey or site-specific soils information should be used to identify the CTSG. This section identifies whether or not a tree or shrub species is adapted to a specific soil (CTSG) as well as climatic conditions (planting zone). If a species is not adapted to a planting zone, supplementary irrigation is required. Highly variable local climatic conditions warrant frequent soil moisture and plant condition monitoring as a basis for watering. CTSGs denoted with an asterisk(*) indicate that the species will require permanent or supplemental irrigation. Also consider scale when using soil survey information for tree plantings. Soil Surveys are typically developed at scale that may not be adequate for site specific tree plantings. Please consult your local NRCS field office if there are any site-specific concerns, such as a water table regarding CTSG.



Additional Considerations That Can Lead to Decline in Trees and Shrubs in Wyoming

This section describes several common problems that can lead to decline in trees and shrubs.

Drought

Individual trees vary widely in their resistance to drought. In years of low rainfall, many tree species can be substantially weakened or killed by drought. Deciduous trees appear to die from the top down, have small, off-colored leaves, and narrow growth rings. Conifers generally die from the bottom up when subjected to drought. Drought and any factor that weakens a tree may allow invasion by many secondary fungi and insects.

Leaf Scorch

This condition is caused by unfavorable weather conditions such as high temperature, dry winds, and/or low soil moisture. Affected trees generally have yellow or brown leaf edges and tips. This condition can be especially problematic for young trees. Watering during hot and dry conditions may prevent or alleviate this problem.

Fall Freeze Damage

Plants still growing actively in the fall may be damaged by unseasonably cold periods. This damage occurs before the plant goes into winter dormancy as indicated by development of fall color and normal leaf drop. Frozen leaves often hang on the tree until spring. This may cause little to no damage or kill the entire tree. Planting trees adapted to the climate of Wyoming is critical to lessen the chances of fall freeze damage.



Winter Freeze Damage

Prolonged mid-winter warm temperatures may cause non-adapted species to begin growing as if it is spring. This condition may cause winter injury when temperatures drop again, leading to minimal viability for new growth. Planting adapted species to the Wyoming climate can lessen the chances of winter freeze damage.

Winter Desiccation

Winter desiccation is most common with evergreens. Winter sun and wind cause water loss from the needles while roots are in frozen soil and unable to replace this water. The usual symptom is purpling or death of needles on the windward side or on the side facing the afternoon sun. Such symptoms may be more severe in newly transplanted trees that have not established a good root system. Late fall and winter watering can minimize winter desiccation.

Sunscald

Bark on the southwest side of tree trunks may be killed by sunscald. Sunscald occurs when bark warms and thaws in the afternoon sun, then refreezes when nighttime temperatures drop rapidly, killing the live tissue. Damage is most common on the darker-colored, smooth-barked tree species such as mountain ash, apple, and maple. Tree wraps can help prevent sunscald. Planting in a site that is shaded in the winter is recommended for susceptible trees.

Frost Cracking

Frost cracking is caused by extremely rapid temperature changes in bark and wood. The bark and wood directly below the bark cracks. If a cold front moves in with a dramatic drop in temperature (i.e., from 30 F to -20 F in a very short period of time), uneven contraction of the wood causes a crack to form suddenly. Sometimes the crack sounds like a gun shot. Damage is most common in hardwood plants such as green ash and in trees growing in open, unsheltered areas. Frost cracking is not common and trees usually heal the cracks with few repercussions.

Color key guide used throughout this document:

Trees

Shrubs

Conifers



PART I: Tree and Shrub Species General Information

TREES

Apricot, Manchurian (*Prunus armeniaca* L. var. *mandshurica*)



- 20 - Year Height:** 15 ft **Mature Height:** 15 to 20 ft
Growth Rate: Rapid **Foliage Color:** Green **Flowers:** White/Pink
Growth Habit: Spreading **Moisture Use:** Medium
Drought Tolerance: Medium **Fire Resistant/Tolerance:** No/None
Wildlife Value: Medium – fruits can be a food source for many species, good seasonal cover value.
Disease/Pests: No major pest problems, rabbits and other rodents can cause bark/girdling damage during winter.
Native to Wyoming: No
Other: Fruit can be eaten or preserved.

Ash, European Mountain (*Sorbus aucuparia* L.)



- 20 - Year Height:** 35 ft **Mature Height:** 40 ft
Growth Rate: Rapid **Foliage Color:** Green **Flowers:** White
Growth Habit: Single stem **Moisture Use:** Medium
Drought Tolerance: Low **Fire Resistant/Tolerance:** No/None
Wildlife Value: Low
Disease/Pests: Prone to insect and disease problems, borers and cankers can be serious problems on stressed trees.
Native to Wyoming: No
Other: Might be difficult to find nursery stock.

Ash, Green (*Fraxinus pennsylvanica* Marshall)



- 20 - Year Height:** 35 ft **Mature Height:** 35 to 80 ft
Growth Rate: Rapid **Foliage Color:** Yellow/Green **Flowers:** Green
Growth Habit: Single stem **Moisture Use:** Medium
Drought Tolerance: Medium **Fire Resistant/Tolerance:** No/None
Wildlife Value: Medium – Moderately palatable to browsing animals, seeds eaten by many species.
Disease/Pests: Susceptible to wide range of insects – webworms, aphids, borer insects. Susceptible to wide range of diseases – Ash flower gall caused by mites, emerald ash borer, yellowed deformed shoots, verticillium wilt, cankers and rust.
Native to Wyoming: Yes
Other: Female trees tend to produce large numbers of seeds potentially taking root; male trees are best for windbreak/shelterbelt projects



Aspen, Quaking (*Populus tremuloides* Michx.)



- 20 - Year Height:** 25 ft
Growth Rate: Rapid
Growth Habit: Single Stem
Drought Resistance: Low
Wildlife Value: Highly palatable to browsing animals and medium palatable to grazing animals. Buds provide food for many species. Important food and building material for beavers.
Disease/Pests: Pocket gophers feeding on roots may inhibit growth.
Native to Wyoming: Yes
Other: Reproduce primarily by sending up sprouts from the roots (clones).
- Mature Height:** 45-65 ft
Foliage Color: Green **Flowers:** Blue
Moisture Use: High
Fire Resistant/Tolerance: Yes/High

Boxelder (*Acer negundo* L.)



- 20 - Year Height:** 18 ft
Growth Rate: Rapid
Growth Habit: Spreading
Drought Tolerance: High
Wildlife Value: Low
Disease/Pests: Stem decay
Native to Wyoming: Yes
Other: Sap used to make syrup, highly sensitive to phenoxy herbicides, boxelder bugs associated with this tree - nuisance to people
- Mature Height:** 60 ft
Foliage Color: Green **Flowers:** White
Moisture Use: Medium
Fire Resistant/Tolerance: No/Low

Buckeye, Ohio (*Aesculus glabra* Willd.)



- 20 - Year Height:** 25 ft
Growth Rate: Rapid
Growth Habit: Single stem
Drought Tolerance: Medium
Wildlife Value: Medium - Nuts provide food for many larger species.
Disease/Pests: Susceptible to leaf scorch
Native to Wyoming: No
Other: Prefers full sun; yellow-orange to red fall foliage; dark brown, inedible fruit with light brown ovule or buckeye; can be structurally weak under heavy snow loads.
- Mature Height:** 68 ft
Foliage Color: Green **Flowers:** Green
Moisture Use: Medium
Fire Resistant/Tolerance: No/Low



Cottonwood, Black (*Populus balsamifera* L. spp *trichocarpa* (Torr. & A. Gray ex Hook.)Brayshaw)



20 - Year Height: 40 ft

Growth Rate: Rapid

Growth Habit: Single Stem

Drought Tolerance: Low

Wildlife Value: Medium - Excellent perch/nest site for large birds, soft wood can provide denning opportunities.

Disease/Pests: Susceptible to aphids, beetle borers, scales, thrips, canker, crown rot, mistletoe, sooty mold.

Native to Wyoming: Yes

Other: Largest of WY cottonwoods with heavy limbs; requires moist site with seasonal high-water table, native along streams west of Continental Divide, and east of the divide along mountain and foothill streams; high amounts of “cotton” during seed dispersion. Sucker easily and weak wooded.

Mature Height: 100 ft

Foliage Color: Green **Flowers:** Yellow

Moisture Use: High

Fire Resistant/Tolerance: No/Low

Cottonwood, Narrowleaf (*Populus angustifolia* James)



20 - Year Height: 45 ft

Growth Rate: Rapid

Growth Habit: Single stem

Drought Tolerance: Low

Wildlife Value: High - Excellent perch, nesting, and denning tree. Good browse value and food/construction material for beavers.

Disease/Pests: Susceptible to aphids, beetle borers, scales, thrips, canker, crown rot, mistletoe, sooty mold.

Native to Wyoming: Yes

Other: Can grow at higher elevations. Requires moist site with seasonal high-water table, native along streams west of Continental Divide, and east of the divide along mountain and foothill streams, high amounts of “cotton” during seed dispersion. Sucker easily.

Mature Height: 40 ft

Foliage Color: Green **Flowers:** White

Moisture Use: Medium

Fire Resistant/Tolerance: No/None

Cottonwood, Plains (*Populus deltoides* W. Bartram ex Marshal spp. *Monilifera* (Aiton)Eckwalder)



20 - Year Height: 40 ft

Growth Rate: Rapid

Growth Habit: Single stem

Drought Tolerance: Low

Wildlife Value: High - Excellent perch, nesting, and denning tree. Good browse value and food/construction material for beavers.

Disease/Pests: Susceptible to aphids, beetle borers, scales, thrips, canker, crown rot, mistletoe, sooty mold.

Native to Wyoming: Yes

Other: Wyoming state tree. Requires moist site with seasonal water table, native along streams east of the Continental Divide. High amounts of “cotton” during seed dispersion. Sucker easily.

Mature Height: 90 ft

Foliage Color: Green **Flowers:** Yellow

Moisture Use: High

Fire Resistant/Tolerance: No/Low



Crab apple, Siberian (*Malus baccata* (L.) Borkh.)



- 20 - Year Height:** 15 ft **Mature Height:** 25 ft
Growth Rate: Moderate **Foliage Color:** Green **Flowers:** White
Growth Habit: Single Stem **Moisture Use:** Medium
Drought Tolerance: Low **Fire Resistant/Tolerance:** No/Low
Wildlife Value: High - Deer and other species utilize the fruit. Fair browse value.
Disease/Pests: Susceptible to scab, fire blight, cankers, powdery mildew and rust.
Native to Wyoming: No
Other: Not native to North America.

Elm, American (*Ulmus americana* L.)



- 20 - Year Height:** 50 ft **Mature Height:** 120 ft
Growth Rate: Rapid **Foliage Color:** Green **Flowers:** Green
Growth Habit: Single stem **Moisture Use:** High
Drought Tolerance: Medium **Fire Resistant/Tolerance:** No/Low
Wildlife Value: Low
Disease/Pests: Dutch elm disease, elm bark and leaf beetles, leaf miner and verticillium wilt
Native to Wyoming: Yes
Other: There are cultivars of this species that are more disease and pest resistant. Once established, requires heavy annual pruning to avoid severe snow load breakage.

Elm, Siberian (*Ulmus pumila* L.)



- 20 - Year Height:** 40 ft **Mature Height:** 70 ft
Growth Rate: Rapid **Foliage Color:** Green **Flowers:** Green
Growth Habit: Single stem **Moisture Use:** Medium
Drought Tolerance: High **Fire Resistant/Tolerance:** No/Low
Wildlife Value: Low - nesting and cover for birds.
Disease/Pests: Can be plagued with elm leaf beetles
Native to Wyoming: No
Other: Resistant to Dutch elm disease. Weak wood breaks easily under heavy snow loads. Prolific seeder can be a problem.



Hackberry, Common (*Celtis occidentalis* L.)



- 20 - Year Height:** 26 ft **Mature Height:** 60 ft
Growth Rate: Rapid **Foliage Color:** Green **Flowers:** Green
Growth Habit: Single Stem **Moisture Use:** Low
Drought Tolerance: High **Fire Resistant/Tolerance:** No/Low
Wildlife Value: Medium - Birds and small mammals eat fruit, which remains on the tree throughout winter providing food during winter months.
Disease/Pests: Presence of disfiguring witches' broom, leaf galls.
Native to Wyoming: Yes
Other: Early to turn leaf color in the fall.

Honeylocust (*Gleditsia triacanthos* L.)



- 20 - Year Height:** 35 ft **Mature Height:** 70 ft
Growth Rate: Rapid **Foliage Color:** Green **Flowers:** Yellow
Growth Habit: Single stem **Moisture Use:** Medium
Drought Tolerance: High **Fire Resistant/Tolerance:** No/Medium
Wildlife Value: Low
Disease/Pests: Problems include leafhopper, cankers, borers, webworms, mites, powdery mildew, rust and leaf spot. Pod like fruit can be very messy.
Native to Wyoming: Yes
Other: Transplants easy, some cultivars do not produce fruit and thorns. Honey locust is a non-nitrogen fixing member of the legume family.

Linden, American (*Basswood*)



- 20 - Year Height:** 20 ft **Mature Height:** 35 to 80 ft
Growth Rate: Moderate **Foliage Color:** Yellow/Green **Flowers:** Green
Growth Habit: Single stem **Moisture Use:** Medium
Drought Tolerance: Low **Fire Resistant/Tolerance:** No/None
Wildlife Value: Medium - Pea-sized seeds are food for birds, and other small animals. Excellent pollinator species, especially for honeybees.
Disease/Pests: Linden borer tunneling into trunk, linden looper, spring Cankerworm, gypsy moth and tent caterpillars, and basswood leaf miner. Biggest insect problem is the Japanese beetle that can defoliate the tree. Adolescent sunscald.
Native to Wyoming: No
Other: Cultivars exist that have larger leaves than original. Good for beehive honey production during spring bloom.



Maple, Silver (*Acer saccharinum* L.)



20 - Year Height: 45 ft

Growth Rate: Rapid

Growth Habit: Single Stem

Drought Tolerance:

Wildlife Value: Low

Disease/Pests: Verticillium wilt, tar spot, cottony maple scale, maple bladder gall. Susceptible to severe iron chlorosis on high pH soils.

Native to Wyoming: No

Other: Rapid growth provides shade quicker than most trees. Breaks easily under heavy snow loads. Spreading seedlings can be a problem.

Mature Height: 90 ft

Foliage Color: Green **Flowers:** Yellow

Moisture Use: Medium

Fire Resistant/Tolerance: No/Low

Maple, Rocky Mountain (*Acer glabrum* Torr.)



20 - Year Height: 15 ft

Growth Rate: Rapid

Growth Habit: Multiple stem

Drought Tolerance: Medium

Wildlife Value: Medium - good browse value. Nesting and cover for birds and small mammals.

Disease/Pests: Not prone to disease

Native to Wyoming: Yes

Other: Prolific sprouter. Red fall foliage

Mature Height: 30 ft

Foliage Color: Green **Flowers:** Green

Moisture Use: Low

Fire Resistant/Tolerance: No/High

Oak, Bur (*Quercus macrocarpa* Michx.)



20 - Year Height: 25 ft

Growth Rate: Slow

Growth Habit: Single stem

Drought Tolerance: High

Wildlife Value: Medium - Produces large acorns preferred by larger birds and some mammals.

Disease/Pests: Oak wilt, leaf galls, bullet gall, kermes scale, bacterial leaf scorch and powdery mildew.

Native to Wyoming: Yes

Other: Long life span. Can be difficult to transplant. Very strong wood..

Mature Height: 100 ft

Foliage Color: Green **Flowers:** Yellow

Moisture Use: Medium

Fire Resistant/Tolerance: No/High



Poplar, Lombardy (*Populus nigra* L.)



20 - Year Height: 80 ft

Growth Rate: Rapid

Growth Habit: Multiple Stem

Drought Tolerance: Low

Wildlife Value: Low

Disease/Pests: Stem canker disease, rusts, leaf spots and powdery mildew. Pests include caterpillars, aphids, willow beetles, and borers.

Native to Wyoming: No

Other: Fast growing species for wind breaks but short - lived, primarily used to get vegetation established while other slower growing species are establishing.

Mature Height: 190 ft

Foliage Color: Green **Flowers:** White

Moisture Use: High

Fire Resistant/Tolerance: No/High

Poplar, White (*Populus alba* L.)



20 - Year Height: 80 ft

Growth Rate: Rapid

Growth Habit: Single stem

Drought Tolerance: Medium

Wildlife Value: Low

Disease/Pests: Common problems are galls, cankers, leaf spots, powdery mildew, aphids, borers and scale insects.

Native to Wyoming: No

Other: Aggressive root sprouter. Brittle wood causing damage under heavy snow load or severe storms.

Mature Height: 100 ft

Foliage Color: Green **Flowers:** Yellow

Moisture Use: High

Fire Resistant/Tolerance: No/High

Willow, Golden (Weeping Willow) (*Salix x sepulcralis* Simonkai [*alba* x *babylonica*])



20 - Year Height: 45 ft

Growth Rate: Rapid

Growth Habit: Single stem

Drought Tolerance: Low

Wildlife Value: Medium - Small mammals and birds feed on buds, foliage, and catkins.

Disease/Pests: Cankers, powdery mildew, leaf spots, willow leaf beetle, scale.

Native to Wyoming: No

Other: Can produce high amounts of dead material (branches and leaves) annually. Susceptible to wind and snow load damage.

Mature Height: 70 ft

Foliage Color: Green **Flowers:** Yellow

Moisture Use: High

Fire Resistant/Tolerance: No/High



Willow, Peachleaf (*Salix amygdaloides* Anderson)



20 - Year Height: 40 ft

Growth Rate: Rapid

Growth Habit: Multiple Stem

Drought Tolerance: Low

Wildlife Value: High - browse for ungulates. Beavers utilize it for both food and structure material.

Disease/Pests: Cankers, powdery mildew, leaf spots, willow leaf beetle, scale.

Native to Wyoming: Yes

Other: Easy to grow from cuttings. Recommended to use plants from same region, elevation, climate, soil type, and moisture regime.

Mature Height: 60 ft

Foliage Color: Green **Flowers:** White

Moisture Use: High

Fire Resistant/Tolerance: No/High



SHRUBS

Alder, Thinleaf (*Alnus incana* (L.) Moench ssp. *tenuifolia* (Nutt.) Breitung)



- 20 - Year Height:** 20 ft **Mature Height:** 20 ft
Growth Rate: Rapid **Foliage Color:** Green **Flowers:** Purple
Growth Habit: Thicket forming **Moisture Use:** High
Drought Tolerance: Low **Fire Resistant/Tolerance:** Medium
Wildlife Value: High - browse for ungulates, food and cover for birds and small mammals. Beavers eat the bark and use for dam construction.
Disease/Pests: Potential to have stump suckers.
Native to Wyoming: Yes
Other: Grows best in heavy moist soils in light shaded areas.

Bitterbrush, Antelope (*Purshia tridentata* (Pursh) DC.



- 20 - Year Height:** 6 ft **Mature Height:** 70 ft
Growth Rate: Moderate **Foliage Color:** Green **Flowers:** Yellow
Growth Habit: Multiple stem **Moisture Use:** Medium
Drought Tolerance: High **Fire Resistant/Tolerance:** No/Medium
Wildlife Value: High - palatable to ungulates.
Disease/Pests: Mountain mahogany lopper, tent caterpillar and western tussock moth can cause defoliation. Cutworms and false wireworms can harm seedlings.
Native to Wyoming: Yes
Other: Can become decadent when not browsed periodically.

Buffaloberry, Silver (*Shepherdia argentea* (Pursh) Nutt.)



- 20 - Year Height:** 18 ft **Mature Height:** 18 ft
Growth Rate: Rapid **Foliage Color:** White/Gray **Flowers:** Yellow
Growth Habit: Multiple stem **Moisture Use:** Medium
Drought Tolerance: Medium **Fire Resistant/Tolerance:** Medium
Wildlife Value: Medium - Dense thickets provide good shelter and nesting cover for birds and small mammals. Berries are not highly palatable to many birds.
Disease/Pests: May be subject to heart rot disease, stem decay and branch canker.
Native to Wyoming: Yes
Other: Species has thorns and a suckering habit which needs to be considered in selection. One of the most saline tolerant woody species.



Caragana (Siberian Pea Shrub) (*Caragana arborescens* Lam.)



- 20 - Year Height:** 12 ft **Mature Height:** 12 ft
Growth Rate: Rapid **Foliage Color:** Green **Flowers:** Yellow
Growth Habit: Multiple Stem **Moisture Use:** Medium
Drought Tolerance: High **Fire Resistant/Tolerance:** Low
Wildlife Value: Low - provides shelter and nesting cover for birds and small mammals. Attracts pollinators when flowering.
Disease/Pests: Susceptible to leaf spot diseases, red spider mites, blister beetles, grasshoppers and aphides which leads to poor foliage quality in mid to late summer.
Native to Wyoming: No
Other: Tolerant of heat, wind, cold, saline and poor soils. Can spread into grasslands and prairies.

Cherry, Nanking (*Prunus tomentosa* Thunb.)



- 20 - Year Height:** 8 ft **Mature Height:** 8 ft
Growth Rate: Moderate **Foliage Color:** Green **Flowers:** White
Growth Habit: Single crown **Moisture Use:** Medium
Drought Tolerance: Medium **Fire Resistant/Tolerance:** Low
Wildlife Value: High - fruit attracts birds and small mammals. Browsed by ungulates.
Disease/Pests: Branch cankers.
Native to Wyoming: No
Other: Edible tart tasting fruit. Individual bush is not self-propagating.

Chokecherry (*Prunus virginiana* L.)



- 20 - Year Height:** 15 ft **Mature Height:** 25 ft
Growth Rate: Rapid **Foliage Color:** Green **Flowers:** White
Growth Habit: Multiple stem **Moisture Use:** Medium
Drought Tolerance: Medium **Fire Resistant/Tolerance:** High
Wildlife Value: Medium - fruit attracts birds and small mammals.
Disease/Pests: Susceptible to X-disease, black knot, stem decay, Valsa canker, and honey fungus. Insect problems include prairie tent caterpillar, western tent caterpillar and aphids.
Native to Wyoming: Yes
Other: Shade tolerant, branches break easily in ice storms or heavy snow load. **New growth, wilted leaves, plant parts injured by frost or drought and seeds are poisonous to cattle, sheep and humans - hydrocyanic acid.**



Almond, Russian (*Prunus tenella* Batsch)



- 20 - Year Height:** 5 ft
- Growth Rate:** Moderate
- Growth Habit:** Rhizomatous
- Drought Tolerance:** High
- Wildlife Value:** Medium - Good for winter browse, cover for birds and small mammals.
- Disease/Pests:** No major pest or disease problems.
- Native to Wyoming:** No
- Other:** Prone to suckering.
- Mature Height:** 5 ft
- Foliage Color:** Green
- Flowers:** White
- Moisture Use:** Medium
- Fire Resistant/Tolerance:** High

Cinquefoil, Shrubby (*Dasiphora fruticosa* (L.)



- 20 - Year Height:** 3 ft
- Growth Rate:** Moderate
- Growth Habit:** Multiple stem
- Drought Tolerance:** High
- Wildlife Value:** Low - used by pollinating insects.
- Disease/Pests:** Downy mildew, powdery mildew, rust, and leaf spot, root rot, spider mites and aphids.
- Native to Wyoming:** Yes
- Other:** Many cultivated varieties available, fairly maintenance free and good choice for browse-resistant planting.
- Mature Height:** 3 ft
- Foliage Color:** Green
- Flowers:** Yellow
- Moisture Use:** Low
- Fire Resistant/Tolerance:** Medium

Cotoneaster, Peking (*Cotoneaster acutifolius* Turcz.)



- 20 - Year Height:** 6 ft
- Growth Rate:** Moderate
- Growth Habit:** Multiple stem
- Drought Tolerance:** Medium
- Wildlife Value:** Medium - fruits are a valuable food source for birds and mammals.
- Disease/Pests:** Fireblight, pear slug, browsed by wildlife.
- Native to Wyoming:** No
- Other:** Should not be planted near crab apples.
- Mature Height:** 13 ft
- Foliage Color:** Green/red
- Flowers:** White
- Moisture Use:** Medium
- Fire Resistant/Tolerance:** High



Currant, Golden (*Ribes aureum Pursh*)



20 - Year Height: 10 ft

Growth Rate: Moderate

Growth Habit: Rhizomatous

Drought Tolerance: Medium

Wildlife Value: Medium - valuable food source for birds and mammals.

Disease/Pests: Host for white pine blister rust, leaf spot, currant worm.

Native to Wyoming: Yes

Other: Generally, begin fruiting after 3 years.

Mature Height: 10 ft

Foliage Color: Green **Flowers:** Yellow

Moisture Use: Low

Fire Resistant/Tolerance: Medium

Currant, Wax (*Ribes cereum Douglas*)



20 - Year Height: 3 ft

Growth Rate: Rapid

Growth Habit: Multiple Stem

Drought Tolerance: High

Wildlife Value: valuable food source for birds and mammals.

Disease/Pests: Host for white pine blister rust.

Native to Wyoming: Yes

Other: Does not grow well in clay soils.

Mature Height: 3 ft

Foliage Color: Green **Flowers:** White

Moisture Use: Low

Fire Resistant/Tolerance: High

Dogwood, Redosier (*Cornus sericea L.*)



20 - Year Height: 12 ft

Growth Rate: Moderate

Growth Habit: Multiple stem

Drought Tolerance: Low

Wildlife Value: High - Browse ungulates, fruits and foliage are a valuable food source for birds and mammals.

Disease/Pests: Twig blight.

Native to Wyoming: Yes

Other: Prone to suckering, blood-red bark provides winter color.

Mature Height: 12 ft

Foliage Color: Green **Flowers:** White

Moisture Use: High

Fire Resistant/Tolerance: Low



Elderberry, Red (*Sambucus racemosa* L.)



- 20 - Year Height:** 10 ft **Mature Height:** 20 ft
Growth Rate: Moderate **Foliage Color:** Green **Flowers:** White
Growth Habit: Multiple Stem **Moisture Use:** High
Drought Tolerance: Low **Fire Resistant/Tolerance:** High
Wildlife Value: Medium – fair to good source of food and cover for birds and animals.
Disease/Pests: Viral cankers, bacterial and fungal leaf spots, powdery mildew and cane borers.
Native to Wyoming: Yes
Other: Red elderberry fruit may be toxic without sufficient preparation when ingested.

False Indigo Bush (*Amorpha fruticosa* L.)



- 20 - Year Height:** 6 ft **Mature Height:** 15 ft
Growth Rate: Slow **Foliage Color:** Green **Flowers:** Purple
Growth Habit: Multiple stem **Moisture Use:** Low
Drought Tolerance: Medium **Fire Resistant/Tolerance:** Low
Wildlife Value: Low – browse for ungulates and cover for birds and small animals.
Disease/Pests: Leaf spot, powdery mildew, rust, twig canker.
Native to Wyoming: Yes
Other: Bacteria form nodules on the roots fix atmospheric nitrogen.

Hawthorn, Black (*Crataegus douglasii* Lindl.)



- 20 - Year Height:** 15 ft **Mature Height:** 15 ft
Growth Rate: Moderate **Foliage Color:** Green **Flowers:** White
Growth Habit: Thicket forming **Moisture Use:** High
Drought Tolerance: Low **Fire Resistant/Tolerance:** High
Wildlife Value: Medium – abundant food and cover for birds and animals.
Disease/Pests: Susceptible to fireblight, cedar-hawthorn rust, cedar-quince rust, leaf blight, fruit rot, and leaf spot.
Native to Wyoming: Yes
Other: Prone to suckering, thorny branches, develops long taproot which needs to be planted in permanent location fairly quickly.



Leadplant (*Amorpha canescens Pursh*)



20 - Year Height: 4 ft

Growth Rate: Moderate

Growth Habit: Multiple Stem

Drought Tolerance: High

Wildlife Value: Medium – used by pollinating insects, palatable to ungulates.

Disease/Pests: Grasshoppers, leafhoppers, and small mammals, leaf spots, rusts, downy mildew, and the canker-causing fungus *Cytospora amorphae*.

Native to Wyoming: Yes

Other: Bacteria form nodules on the roots fix atmospheric nitrogen.

Mature Height: 4 ft

Foliage Color: Green **Flowers:** Purple

Moisture Use: Low

Fire Resistant/Tolerance: High

Lilac, Common (*Syringa vulgaris L.*)



20 - Year Height: 6 ft

Growth Rate: Moderate

Growth Habit: Rhizomatous

Drought Tolerance: Medium

Wildlife Value: Low – used by pollinating insects, some browse value.

Disease/Pests: Powdery mildew.

Native to Wyoming: No

Other: Should be planted in areas with good air circulation to reduce powdery mildew. Does not tolerate poorly drained soils.

Mature Height: 10 ft

Foliage Color: Green **Flowers:** Purple

Moisture Use: Medium

Fire Resistant/Tolerance: High

Mahogany, Curl-leaf Mountain (*Cercocarpus ledifolius Nutt.*)



20 - Year Height: 9 ft

Growth Rate: Moderate

Growth Habit: Multiple stem

Drought Tolerance: High

Wildlife Value: High – browse for ungulates, cover for birds and small animals.

Disease/Pests: No major.

Native to Wyoming: Yes

Other: Fruit has a long, twisted plume tail.

Mature Height: 15 ft

Foliage Color: Green **Flowers:** Yellow

Moisture Use: Low

Fire Resistant/Tolerance: Medium



Maple, Amur (*Acer ginnala Maxim.*)



- 20 - Year Height:** 15 ft
- Growth Rate:** Rapid
- Growth Habit:** Multiple Stem
- Drought Tolerance:** Medium
- Wildlife Value:** Low - cover for birds and small animals.
- Disease/Pests:** Usually pest free, aphids
- Native to Wyoming:** No
- Other:** Red fall color, low growing tree for smaller places.
- Mature Height:** 20 ft
- Foliage Color:** Green
- Flowers:** White
- Moisture Use:** Medium
- Fire Resistant/Tolerance:** High

Oak, Gambel (*Quercus gambelii Nutt.*)



- 20 - Year Height:** 15 ft
- Growth Rate:** Slow
- Growth Habit:** Single stem
- Drought Tolerance:** High
- Wildlife Value:** Medium - acorns and foliage are a valuable food source for birds and mammals.
- Disease/Pests:** Galls, scales, crown rot, mistletoe, root rot, beetle bores, caterpillars.
- Native to Wyoming:** Yes
- Other:** Tannic acid poisoning of livestock if consume more than 50% of diet.
- Mature Height:** 40 ft
- Foliage Color:** Green
- Flowers:** Yellow
- Moisture Use:** Low
- Fire Resistant/Tolerance:** High

Plum, American (*Prunus americana Marshall*)



- 20 - Year Height:** 10 ft
- Growth Rate:** Moderate
- Growth Habit:** Single stem
- Drought Tolerance:** Low
- Wildlife Value:** High - fruits and foliage are a valuable food source for birds and mammals.
- Disease/Pests:** Stem decay, branch cankers, black knot, plum pockets, prairie tent caterpillar.
- Native to Wyoming:** Yes
- Other:** Edible fruit, thorny, thicket forming.
- Mature Height:** 15 ft
- Foliage Color:** Green
- Flowers:** White
- Moisture Use:** Medium
- Fire Resistant/Tolerance:** Medium



Pear, Ussurian (Chinese) (*Pyrus ussuriensis Maxim.*)



20 - Year Height: 25 ft **Mature Height:** 60 ft
Growth Rate: Slow **Foliage Color:** Green **Flowers:** Green
Growth Habit: Single Stem **Moisture Use:** Low
Drought Tolerance: Medium **Fire Resistant/Tolerance:** No/Low
Wildlife Value: High – fruits and foliage are a valuable food source for birds and mammals.
Disease/Pests: Fireblight..
Native to Wyoming: No
Other: Edible fruit.

Rose, Woods' (*Rosa woodsii Lindl.*)



20 - Year Height: 6 ft **Mature Height:** 70 ft
Growth Rate: Rapid **Foliage Color:** Green **Flowers:** Yellow
Growth Habit: Rhizomatous **Moisture Use:** Medium
Drought Tolerance: Medium **Fire Resistant/Tolerance:** No/Medium
Wildlife Value: High – fruits and foliage are a valuable food source for birds and mammals.
Disease/Pests: No serious disease or pest problems.
Native to Wyoming: Yes
Other: Thorny, thicket forming.

Sagebrush, Mountain Big (*Artemisia tridentata Nutt. ssp. vaseyana (Rydb.) Beetle*)



20 - Year Height: 5 ft **Mature Height:** 7 ft
Growth Rate: Slow **Foliage Color:** Gray/Green **Flowers:**
Growth Habit: Multiple stem **Moisture Use:** Low
Drought Tolerance: Medium **Fire Resistant/Tolerance:** None
Wildlife Value: High – winter browse for ungulates, food and cover for birds and small mammals.
Disease/Pests: Sagebrush defoliator moth, or webworm, microbial and fungal pathogens.
Native to Wyoming: Yes
Other: Evergreen leaves, probably most important shrub on western rangelands.



Sagebrush, Silver (*Artemisia cana Pursh*)



- 20 - Year Height:** 5 ft **Mature Height:** 5 ft
Growth Rate: Moderate **Foliage Color:** Gray/Green **Flowers:** Yellow
Growth Habit: Rhizomatous **Moisture Use:** Low
Drought Tolerance: High **Fire Resistant/Tolerance:** High
Wildlife Value: High - winter browse for ungulates, food and cover for birds and small mammals.
Disease/Pests: Sagebrush defoliator moth, or webworm, microbial and fungal pathogens.
Native to Wyoming: Yes
Other: Evergreen leaves; re-sprouting species; ssp. cana predominating east of continental divide and ssp. viscidula predominates in the mountains and west of continental divide.

Sagebrush, Wyoming Big (*Artemisia tridentata Nutt. ssp. wyomingensis Beetle & Young*)



- 20 - Year Height:** 3 ft **Mature Height:** 3 ft
Growth Rate: Slow **Foliage Color:** Grey/Green **Flowers:** Yellow
Growth Habit: Multiple stem **Moisture Use:** Medium
Drought Tolerance: High **Fire Resistant/Tolerance:** Low
Wildlife Value: High - winter browse for ungulates, food and cover for birds and small mammals.
Disease/Pests: Sagebrush defoliator moth, or webworm, microbial and fungal pathogens.
Native to Wyoming: Yes
Other: Evergreen leaves, probably most important shrub on western rangelands.

Saltbush, Fourwing (*Atriplex canescens (Pursh) Nutt.*)



- 20 - Year Height:** 4 ft **Mature Height:** 4 ft
Growth Rate: Slow **Foliage Color:** Green **Flowers:** Yellow
Growth Habit: Multiple stem **Moisture Use:** Medium
Drought Tolerance: High **Fire Resistant/Tolerance:** Low
Wildlife Value: High - winter browse for ungulates, food and cover for birds and small mammals.
Disease/Pests: No identified serious pests or diseases.
Native to Wyoming: Yes
Other: Also called chamise, deep rooted (20 to 40 feet), tolerant of salt-affected soils.



Sandcherry (*Prunus pumila* L.)



- 20 - Year Height:** 6 ft
- Growth Rate:** Slow
- Growth Habit:** Multiple Stem
- Drought Tolerance:** Medium
- Wildlife Value:** High - browse for ungulates, food and cover for birds and small mammals.
- Disease/Pests:** Fireblight, leaf curl, black knot.
- Native to Wyoming:** Yes
- Other:** For fruit production plant more than one.
- Mature Height:** 6 ft
- Foliage Color:** Green
- Flowers:** White
- Moisture Use:** Low
- Fire Resistant/Tolerance:** Low

Sandcherry, Western (*Prunus pumila* L. var. *besseyi* (L.H. Bailey) Gleason)



- 20 - Year Height:** 4 ft
- Growth Rate:** Moderate
- Growth Habit:** Multiple stem
- Drought Tolerance:** Low
- Wildlife Value:** High - browse for ungulates, food and cover for birds and small mammals.
- Disease/Pests:** Fireblight, leaf curl, black knot.
- Native to Wyoming:** Yes
- Other:** Extracts of Prunus species repel or are toxic to various insect pests.
- Mature Height:** 6 ft
- Foliage Color:** Green
- Flowers:** White
- Moisture Use:** Medium
- Fire Resistant/Tolerance:** Medium

Serviceberry, Saskatoon (*Amelanchier alnifolia* (Nutt.) Nutt. ex M. Roem.)



- 20 - Year Height:** 10 ft
- Growth Rate:** Moderate
- Growth Habit:** Multiple stem
- Drought Tolerance:** Medium
- Wildlife Value:** High - browse for ungulates, food and cover for birds and small mammals.
- Disease/Pests:** Western tent caterpillar
- Native to Wyoming:** Yes
- Other:** Hybridized cultivar species of serviceberry.
- Mature Height:** 35 to 80 ft
- Foliage Color:** Yellow/Green
- Flowers:** Green
- Moisture Use:** Medium
- Fire Resistant/Tolerance:** No/None



Silverberry (*Elaeagnus commutate* Bernh. Ex Rydb.)



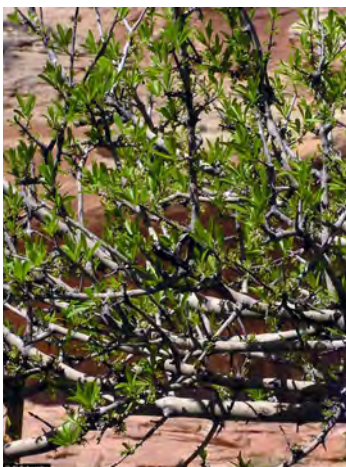
- 20 - Year Height:** 6 ft
- Growth Rate:** Rapid
- Growth Habit:** Multiple Stem
- Drought Tolerance:** High
- Wildlife Value:** High - Important browse for ungulates, food and cover for birds and small mammals.
- Disease/Pests:** Host for crown rust.
- Native to Wyoming:** Yes
- Other:** Relatively shade intolerant.
- Mature Height:** 12 ft
- Foliage Color:** White/Gray
- Flowers:** Yellow
- Moisture Use:** Low
- Fire Resistant/Tolerance:** Medium

Snowberry, Western (*Symphoricarpos albus* (L.) S.F. Blake)



- 20 - Year Height:** 3 ft
- Growth Rate:** Moderate
- Growth Habit:** Thicket forming
- Drought Tolerance:** High
- Wildlife Value:** Medium - Browse for wildlife, food and cover for birds and small mammals.
- Disease/Pests:** No serious disease or pest problems.
- Native to Wyoming:** Yes
- Other:** Fruit contains low concentrations of bitter saponin, easily suckers and grows in clumps.
- Mature Height:** 3 ft
- Foliage Color:** Green
- Flowers:** White
- Moisture Use:** Low
- Fire Resistant/Tolerance:** High

Stretchberry, (New Mexico Privet) (*Forestiera pubescens* Nutt.)



- 20 - Year Height:** 6 ft
- Growth Rate:** Moderate
- Growth Habit:** Multiple stem
- Drought Tolerance:** Medium
- Wildlife Value:** Medium - fruits and foliage are a valuable food source for birds and mammals.
- Disease/Pests:** No serious disease or pest problems.
- Native to Wyoming:** No
- Other:** Grows best in soils with a pH range of 7.0 to 8.5.
- Mature Height:** 15 ft
- Foliage Color:** Green
- Flowers:** Yellow
- Moisture Use:** Medium
- Fire Resistant/Tolerance:** None



Sumac, Skunkbush (*Rhus trilobata* Nutt.)



20 - Year Height: 8 ft

Growth Rate: Slow

Growth Habit: Rhizomatous

Drought Tolerance: Medium

Wildlife Value: Medium – fruits, persist through winter provide a food for birds and small mammals. Dense thickets could provide good shelter and nesting cover for birds and small mammals.

Disease/Pests: No serious disease or pest problems.

Native to Wyoming: Yes

Other: Can be planted as deterrent to browsing animals.

Mature Height: 10 ft

Foliage Color: Green **Flowers:** Yellow

Moisture Use: Low

Fire Resistant/Tolerance: Medium

Willow, Coyote (narrowleaf, sandbar) (*Salix exigua* Nutt.)



20 - Year Height: 10 ft

Growth Rate: Rapid

Growth Habit: Rhizomatous

Drought Tolerance: Low

Wildlife Value: Medium – Provides shelter for birds, and forage for ungulates.

Disease/Pests: Twig cankers, tar spot, aphids, willow galls, scale insects.

Native to Wyoming: Yes

Other: This plant could become weedy or invasive in some regions or habitats and may displace desirable vegetation if not properly managed.

Mature Height: 10 ft

Foliage Color: Green **Flowers:** Yellow

Moisture Use: High

Fire Resistant/Tolerance: High



CONIFERS

Fir, Douglas (*Pseudotsuga menziesii* (Mirb.) Franco)



20 - Year Height: 15 ft

Growth Rate: Moderate

Growth Habit: Single Stem

Drought Tolerance: Low

Wildlife Value: Low - primarily year-long cover.

Disease/Pests: Douglas-fir beetle, Douglas-fir tussock moths, heart and root rot.

Native to Wyoming: Yes

Other: Needs well drained, neutral to acidic soils and does best in full or part-shade.

Mature Height: 130 ft

Foliage Color: Green

Moisture Use: Medium

Fire Resistant/Tolerance: Low

Fir, Subalpine (*Abies lasiocarpa* (Hook.) Nutt.)



20 - Year Height: 15 ft

Growth Rate: Slow

Growth Habit: Single Stem

Drought Tolerance: Low

Wildlife Value: Low - primarily year-long cover.

Disease/Pests: Heart rot is a severe problem.

Native to Wyoming: Yes

Other: Shallow root system makes it susceptible to windthrow, prefers acidic soils, more moisture and higher elevations.

Mature Height: 90 ft

Foliage Color: Green

Moisture Use: Medium

Fire Resistant/Tolerance: Low

Fir, White (*Abies concolor* (Gord. & Glend.) Lindl. ex. Hildebr.)



20 - Year Height: 20 ft

Growth Rate: Slow

Growth Habit: Single stem

Drought Tolerance: Medium

Wildlife Value: Low - primarily year-long cover.

Disease/Pests: Young trees are subject to sunscald, spruce budworm, Douglas-fir tussock moth, bark beetles, mistletoe, heart rot fungi.

Native to Wyoming: Yes

Other: Shallow root system makes it susceptible to windthrow.

Mature Height: 120 ft

Foliage Color: Green

Moisture Use: Medium

Fire Resistant/Tolerance: Medium



Juniper, Rocky Mountain (*Juniperus scopulorum* Sarg.)



20 - Year Height: 12 ft

Growth Rate: Slow

Growth Habit: Single Stem

Drought Tolerance: High

Wildlife Value: Medium - Berries provide winter food and provides year-round cover for many species.

Disease/Pests: Alternate host for apple scab, gets cedar apple rust, and in higher precipitation zones moving east, gets serious fungal diseases.

Native to Wyoming: Yes

Other: Can be used as a single-row windbreak.

Mature Height: 30 ft

Foliage Color: Green

Moisture Use: Low

Fire Resistant/Tolerance: Low

Pine, Austrian (*Pinus nigra* Arnold)



20 - Year Height: 17 ft

Growth Rate: Moderate

Growth Habit: Single stem

Drought Tolerance: Medium

Wildlife Value: Low - primarily year-long cover.

Disease/Pests: Needle blight, canker, pine wilt, sooty mold, pine moth, spider mites, pine bark adelgid and European pine sawfly.

Native to Wyoming: No

Other: Can be prone to disease. Very similar to Ponderosa, but much slower growing.

Mature Height: 50 ft

Foliage Color: Green

Moisture Use: Medium

Fire Resistant/Tolerance: Low

Pine, Lodgepole (*Pinus contorta* Douglas ex Loudon)



20 - Year Height: 17 ft

Growth Rate: Rapid

Growth Habit: Single stem

Drought Tolerance: Medium

Wildlife Value: Low - primarily year-long cover.

Disease/Pests: Mountain pine beetle, mistletoe, rust and root rot.

Native to Wyoming: Yes

Other: Shallow root system makes it susceptible to windthrow; prefers neutral to acidic soil pH.

Mature Height: 100 ft

Foliage Color: Green

Moisture Use: Medium

Fire Resistant/Tolerance: Low



Pine, Limber (*Pinus flexilis* James)



20 - Year Height: 10 ft

Growth Rate: Slow

Growth Habit: Single Stem

Drought Tolerance: High

Wildlife Value: Low - primarily year-long cover.

Disease/Pests: White pine blister rust, needle casts.

Native to Wyoming: Yes

Other: Another host for the white pine blister rust is currants and gooseberries, if planting limber pine in a wind break avoid currants and gooseberries.

Mature Height: 20 ft

Foliage Color: Green

Moisture Use: Low

Fire Resistant/Tolerance: Low

Pine, Pinyon (twoneedle pinyon) (*Pinus edulis* Engelm.)



20 - Year Height: 10 ft

Growth Rate: Slow

Growth Habit: Single Stem

Drought Tolerance: High

Wildlife Value: Medium - many birds and animals use the seeds, year-long cover.

Disease/Pests: Mountain pine beetle.

Native to Wyoming: Yes

Other: Edible seeds.

Mature Height: 50 ft

Foliage Color: Green

Moisture Use: Low

Fire Resistant/Tolerance: Low

Pine, Ponderosa (*Pinus ponderosa* Lawson & C. Lawson)



20 - Year Height: 17 ft

Growth Rate: Moderate

Growth Habit: Single stem

Drought Tolerance: High

Wildlife Value: Medium - Seeds preferred by many birds and small mammals.

Disease/Pests: Beavers and porcupines can damage the tree, Ips bark beetle, mistletoe, western gall rust.

Native to Wyoming: Yes

Other: Strong species in the wind, little potential for top breakage. Shade intolerant.

Mature Height: 130 ft

Foliage Color: Green

Moisture Use: Medium

Fire Resistant/Tolerance: High



Pine, Scotch (Scots) (*Pinus sylvestris* L.)



20 - Year Height: 17 ft

Growth Rate: Rapid

Growth Habit: Single Stem

Drought Tolerance: Medium

Wildlife Value: Medium - Seeds are a choice food for many birds and small mammals.

Disease/Pests: Cyclaneusma needle cast, western gall rust, Lophodermium needle cast, tip moth, sawflies, pine needle scales and giant conifer aphid.

Native to Wyoming: No

Other: Plant Scotch pine in the central or leeward rows of multi-row plantings or can also be planted as a single-row windbreak.

Mature Height: 40 ft

Foliage Color: Green

Moisture Use: Medium

Fire Resistant/Tolerance: Low

Larch, Western (*Larix occidentalis* Nutt.)



20 - Year Height: 17 ft

Growth Rate: Rapid

Growth Habit: Single Stem

Drought Tolerance: Low

Wildlife Value: Medium - Seeds are palatable to birds and mammals.

Disease/Pests: Deciduous habit helps with resistance to pests. Mistletoe, sporadic needle blight, needlecast, and root and stem rots.

Native to Wyoming: Yes

Other: Western larch is a deciduous conifer. It loses its needles in the fall.

Mature Height: 150 ft

Foliage Color: Yellow-Green

Moisture Use: Low

Fire Resistant/Tolerance: Low

Spruce, White (Black Hills Spruce) (*Picea glauca* (Moench) Voss)



20 - Year Height: 12 ft

Growth Rate: Slow

Growth Habit: Single stem

Drought Tolerance: High

Wildlife Value: Medium - seeds are used by birds and animals.

Disease/Pests: Spruce budworm, western spruce budworm.

Native to Wyoming: Yes

Other: Cone drops have been reported as young as 4 years.

Mature Height: 70 ft

Foliage Color: Green

Moisture Use: Medium

Fire Resistant/Tolerance: Low



Spruce, Engelmann (*Picea engelmannii* Parry ex Engelm.)



- 20 - Year Height:** 14 ft
- Growth Rate:** Slow
- Growth Habit:** Single Stem
- Drought Tolerance:** Low
- Wildlife Value:** Low - Winter cover for birds and animals.
- Disease/Pests:** Spruce beetle, spruce budworm.
- Native to Wyoming:** Yes
- Other:** Shallow root system makes it susceptible to windthrow.
- Mature Height:** 120 ft
- Foliage Color:** Green
- Moisture Use:** Medium
- Fire Resistant/Tolerance:** Low

Spruce, Colorado Blue (*Picea pungens* Engelm.)



- 20 - Year Height:** 15 ft
- Growth Rate:** Slow
- Growth Habit:** Single Stem
- Drought Tolerance:** Medium
- Wildlife Value:** Low - Winter cover for birds and animals.
- Disease/Pests:** Western spruce budworm larvae feed on old needles in the spring, and mine developing buds, defoliating new tree growth.
- Native to Wyoming:** Yes
- Other:** Wood is brittle and often full of knots, cold hardy.
- Mature Height:** 70 ft
- Foliage Color:** Green
- Moisture Use:** Medium
- Fire Resistant/Tolerance:** Low



PART II: Wyoming Conservation Tree and Shrub Planting Zones

Planting Zone	Major Land Resource Area (MLRA)
1	32 (Northern Intermountain Desertic Basins)
2	34A (Cool Central Desertic Basins and Plateaus), 13-1 (Eastern Idaho Plateaus-LRU=Bear River Valley)
3	43B (Central Rocky Mountains), 48A (Southern Rocky Mountains)
4	61 (Black Hills Foot Slopes), 62 (Black Hills)
5	58A (Northern Rolling High Plains, Northern Part), 58B (Northern Rolling High Plains, Southern Part), 60A (Pierre Shale Plains), 60B (Pierre Shale Plains, Northern Part), 64 (Mixed Sandy and Silty Tableland and Badlands), 67A (Central High Plains, Northern Part), 72 (Central High Tableland)
6	13 (Eastern Idaho Plateaus), 46 (Northern Rocky Mountain Foothills), 49 (Southern Rocky Mountain Foothills)

Planting Zone 1:

This zone consists of the entire MLRA 32. Typical areas in this zone include the towns of Riverton, Powell, Worland, and Greybull as well as most of the Wind River Indian Reservation. Average annual precipitation ranges from 6 to 12 inches in this planting zone. Soil temperature regimes are predominately mesic and soil moisture regime is predominately ustic aridic. Native vegetation is Wyoming big sagebrush, gardener's saltbush, and bunchgrasses. This area does not typically support adapted tree or shrub species except in areas that receive supplementary moisture such as riparian areas or in the upper end of the precipitation range, Rocky mountain juniper may establish. Permanent irrigation is required for establishment and survival of most tree and shrub species in this planting zone.

Planting Zone 2:

This zone consists of the entire MLRA 34A and the Bear River Valley LRU of MLRA 13. Typical areas in this zone include the towns of Cokeville, Pinedale, Rawlins, and Rock Springs. Average annual precipitation ranges from 7 to 12 inches in the majority of this planting zone. Soil temperature regime is predominately frigid and soil moisture regime(s) are predominately ustic aridic, aridic ustic, or xeric. There are some areas within this planting zone that are bordering cryic and have very low frost-free days. Cold hardiness and frost tolerance of species must be strongly considered in this planting zone. Native vegetation is Wyoming big sagebrush, saltbush, and bunchgrasses and varies depending on elevation and precipitation throughout the planting zone. This area does not typically support adapted tree or shrub species except in areas that receive supplementary moisture such as riparian areas or in the upper end of the precipitation range. This zone also has small isolated areas that receive greater than 15 inches of precipitation and may support adapted tree and shrub species. Permanent irrigation is required for establishment and survival of most tree and shrub species in the majority of the planting zone.

Planting Zone 3:

This zone consists of MLRAs: 43B, 48A, and 62. Typical areas in this zone include the Wind River mountain range, Absaroka mountain range, Big Horn mountain range, and Medicine Bow mountain range. Average annual precipitation ranges from around 15 to 60 inches and varies widely based on elevation. Soil temperature regimes are predominately frigid or cryic and soil moisture regime is predominately ustic or udic. Cold hardiness and frost tolerance of species must be strongly



considered in this planting zone. Native vegetation varies throughout the planting zone based on elevation and aspect and impacts on precipitation and temperature. The lower elevation areas consist of native grassland or shrub-dominated vegetation. Mid elevation areas consist of mixed conifer and deciduous trees. High elevation areas consist of conifer dominated forests and alpine tundra at the highest elevations. This area supports adapted tree and shrub species in most areas. **Supplemental irrigation is required for establishment of some tree and shrub species in areas with lower precipitation in this planting zone.**

Planting Zone 4:

This zone consists of MLRA 61 and 62. Typical areas in this zone include the towns of Sundance, Newcastle, Devils Tower national monument, Black Hills National Forest, Deadwood SD, and Custer SD. Average annual precipitation ranges from 14 to 37 inches in this planting zone. Soil temperature regime(s) are frigid, mesic, or cryic and the soil moisture regime(s) are ustic or udic. Vegetation communities consist of native grassland, dense forest, and savanna. Typical adapted tree species consist of Ponderosa pine, Boxelder, American elm, Bur oak, and Quaking aspen. **Supplemental irrigation is required for establishment of some tree and shrub species in areas with lower precipitation in this planting zone.**

Planting Zone 5:

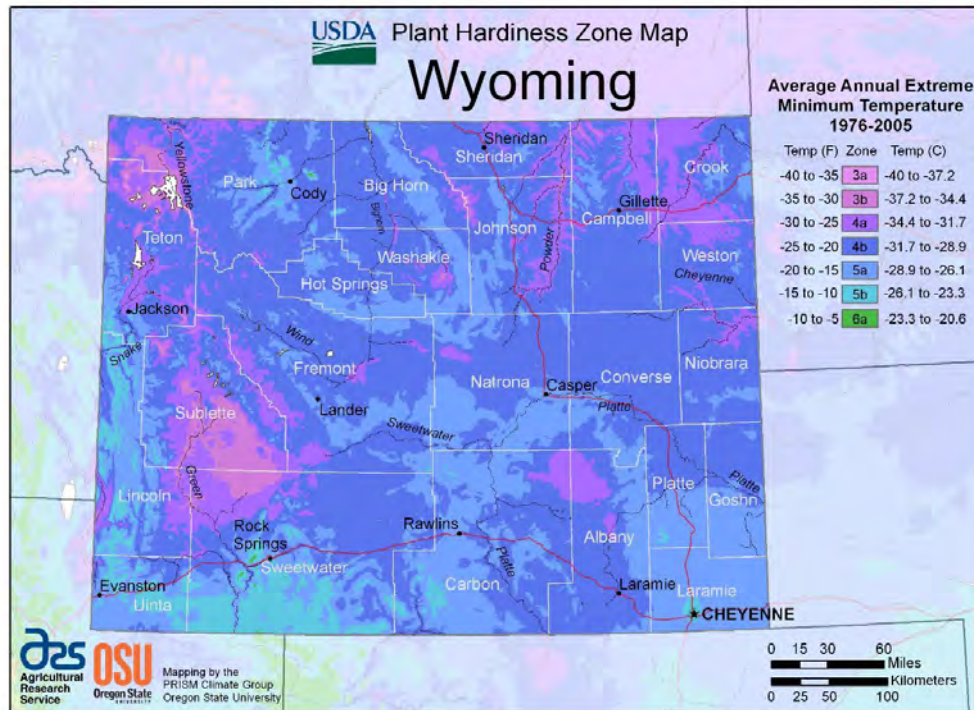
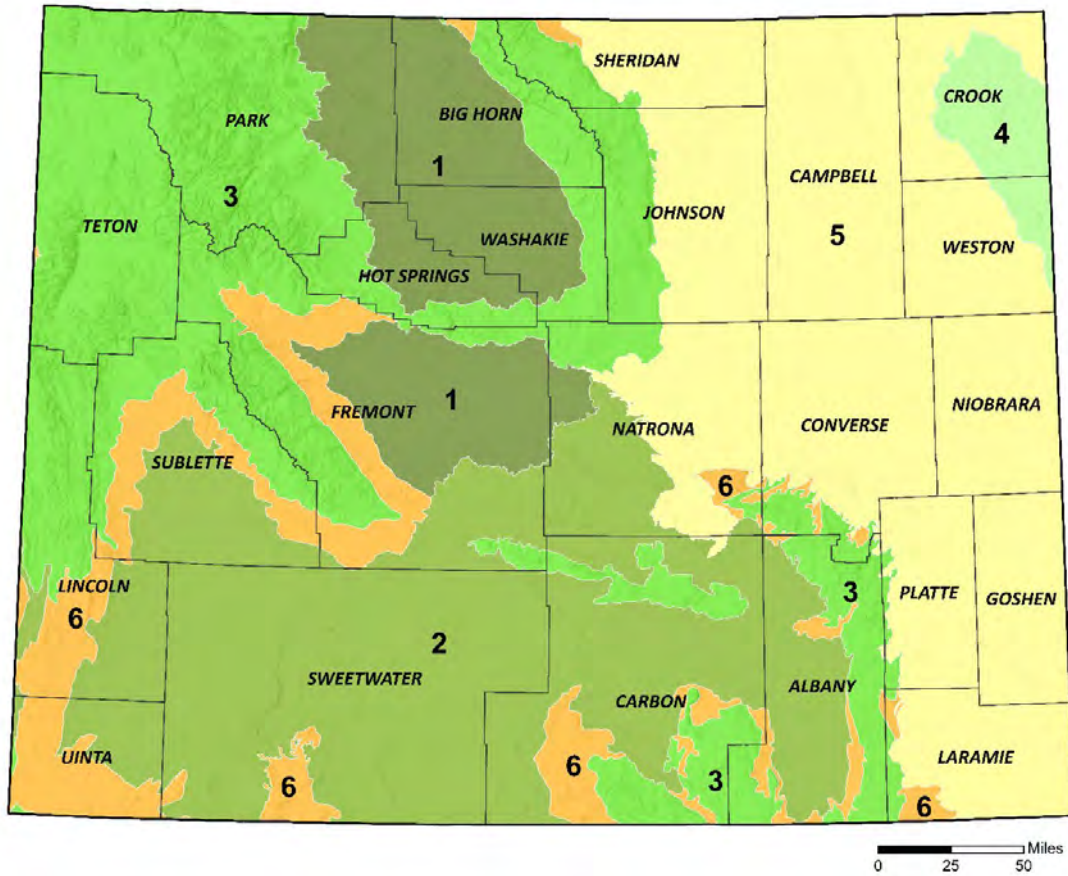
This zone consists of MLRAs: 58A, 58B, 60A, 60B, 64, 67A, and 72. Typical areas in this zone include the towns of Lusk, Cheyenne, Wheatland, and the Thunder Basin national grassland. Average annual precipitation ranges from 10 to 22 inches in the majority of this planting zone. Soil temperature regime(s) are predominately mesic with some frigid and the soil moisture regime is ustic with aridic intergrades in areas with lower precipitation. The vegetative community is primarily native grassland. **Supplemental irrigation is required for establishment of most tree and shrub species in this planting zone. Permanent irrigation is required for survival of some tree and shrub species in this planting zone.**

Planting Zone 6:

This zone consists of MLRA 13, 46 and 49. Typical areas in this zone include the foothill areas around Cokeville, Dubois, Evanston, Kemmerer, Laramie, Lander, Pinedale, and Saratoga. This also includes the Alta area in Wyoming. Average precipitation ranges from 13 to 25 inches in the majority of this planting zone. Soil temperature regime(s) are predominately frigid or cryic and the soil moisture regime(s) are xeric or ustic with udic intergrades in the areas with higher precipitation. The vegetative communities are diverse with shrub dominated rangeland in the lower elevations and forest vegetation at the higher elevations. **Supplemental irrigation is required for establishment of some tree and shrub species in areas with lower precipitation in this planting zone.**



Wyoming Conservation Tree and Shrub Group Planting Zones Map



PART III: Tree and Shrub Species Characteristics

TREES: Species Characteristics

Species Characteristics		Native to Wyoming (Y/N)	20-Year Tree Height (ft.)	Mature Height (ft.)	Growth Rate	Precipitation Minimum (in.)	Drought Tolerance	Saline/Alkali tolerance	Calcium Carbonate Tolerance (CaCO3)	Root depth, Minimum (in.)	Flooding
Deciduous trees											
Common Name	Scientific Name										
Apricot, Manchurian	<i>Prunus armeniaca</i> var. <i>mandshurica</i>	N	15	15-20	R	-	medium	low	-	-	intolerant
Ash, European Mountain	<i>Sorbus aucuparia</i>	N	35	40	R	28	low	none	low	28	intolerant
Ash, Green	<i>Fraxinus pennsylvanica</i>	Y	35	35-80	R	15	medium	low	high	40	tolerant
Aspen, Quaking	<i>Populus tremuloides</i>	Y	25	40-65	R	15	low	medium	high	36	intolerant
Boxelder	<i>Acer negundo</i>	Y	18	60	R	15	medium	medium	high	40	moderately tolerant
Buckeye, Ohio	<i>Aesculus glabra</i>	N	25	68	R	25	medium	none	medium	36	tolerant
Cottonwood, Black	<i>Populus balsamifera</i>	Y	40	100	R	16	low	none	medium	30	tolerant
Cottonwood, Narrowleaf	<i>Populus angustifolia</i>	Y	45	70	R	20	low	medium	high	12	tolerant
Cottonwood, Plains	<i>Populus deltoides</i>	Y	40	90	R	15	low	none	medium	24	tolerant
Crab apple, Siberian	<i>Malus bacatta</i>	N	15	25	M	12	medium	low	medium	24	intolerant
Elm, American	<i>Ulmus americana</i>	Y	50	120	R	15	medium	low	medium	42	moderately tolerant
Elm, Siberian	<i>Ulmus pumila</i>	N	40	70	R	16	high	medium	low	24	moderately tolerant
Hackberry, Common	<i>Celtis occidentalis</i>	Y	26	60	R	14	high	low	medium	36	tolerant
Honeylocust	<i>Gleditsia triacanthos</i>	Y	35	70	R	20	high	medium	medium	48	moderately tolerant
Linden, American (Basswood)	<i>Tilia americana</i>	N	20	100	M	21	low	none	low	30	moderately tolerant
Maple, Rocky Mountain	<i>Acer glabrum</i>	Y	15	30	R	9	medium	none	medium	24	moderately tolerant
Maple, Silver	<i>Acer saccharinum</i>	N	45	90	R	20	low	low	medium	32	tolerant
Oak, Bur	<i>Quercus macrocarpa</i>	Y	25	100	S	15	high	low	medium	28	intolerant
Poplar, Lombardy	<i>Populus nigra</i>	N	80	190	R	20	low	low	high	32	tolerant
Poplar, White	<i>Populus alba</i>	N	80	100	R	24	medium	medium	medium	24	moderately tolerant
Willow, Golden	<i>Salix xsepulcralis</i> [<i>alba</i> x <i>babylonica</i>]	N	45	70	R	30	low	none	low	24	tolerant
Willow, Peachleaf	<i>Salix amygdaloides</i>	Y	45	60	R	24	low	none	medium	30	tolerant



SHRUBS: Species Characteristics

Species Characteristics		Native to Wyoming (Y/N)	20-Year Tree Height (ft.)	Mature Height (ft.)	Growth Rate	Precipitation Minimum (in.)	Drought Tolerance	Saline/Alkali tolerance	Calcium Carbonate Tolerance (CaCO ₃)	Root depth, Minimum (in.)	Flooding
Shrubs											
Common name	Scientific name										
Alder, Thinleaf	<i>Alnus incana</i>	Y	20	20	R	20	low	none	none	18	tolerant
Bitterbrush, Antelope	<i>Purshia tridentata</i>	Y	6	6	M	8	high	none	high	20	intolerant
Buffaloberry, Silver	<i>Shepherdia argentea</i>	Y	18	18	R	15	medium	high	high	24	moderately tolerant
Caragana (Siberian Pea Shrub)	<i>Caragana arborescens</i>	N	12	12	R	12	high	medium	high	16	intolerant
Cherry, Nanking	<i>Prunus tomentosa</i>	N	8	8	M	15	medium	low	medium	20	moderately tolerant
Chokecherry	<i>Prunus virginiana</i>	Y	15	25	R	13	medium	medium	high	20	moderately tolerant
Almond, Russian	<i>Prunus tenella</i>	N	5	5	M	15	high	none	Low	14	intolerant
Cinquefoil, Shrubby	<i>Dasiphora fruticosa</i>	Y	3	3	M	11	medium	medium	high	30	tolerant
Cotoneaster, Peking	<i>Cotoneaster acutifolius</i>	N	6	13	M	10	medium	high	high	16	intolerant
Currant, Golden	<i>Ribes aureum</i>	Y	10	10	M	12	medium	none	high	20	moderately tolerant
Currant, Wax	<i>Ribes cereum</i>	Y	3	3	R	13	high	none	high	12	moderately tolerant
Dogwood, Redosier	<i>Cornus sericea</i>	Y	12	12	M	18	low	none	none	20	tolerant
Elderberry, Red	<i>Sambucus racemosa</i>	Y	10	20	R	20	low	none	medium	30	moderately tolerant
Hawthorn, Black	<i>Crataegus douglasii</i>	Y	15	15	M	16	low	none	medium	12	moderately tolerant
False Indigo Bush	<i>Amorpha fruticosa</i>	Y	6	15	S	10	medium	low	medium	24	tolerant
Leadplant	<i>Amorpha canescens</i>	Y	4	4	M	20	high	low	high	20	intolerant
Lilac, Common	<i>Syringa vulgaris</i>	N	6	10	M	20	medium	medium	high	14	intolerant
Mahogany, Curl-leaf Mountain	<i>Cercocarpus ledifolius</i>	Y	9	15	M	10	high	none	high	20	intolerant
Maple, Amur	<i>Acer ginnala</i>	N	15	20	R	15	medium	medium	medium	24	intolerant
Oak, Gambel	<i>Quercus gambelii</i>	Y	15	40	S	10	high	none	high	36	intolerant
Plum, American	<i>Prunus americana</i>	Y	10	15	M	16	none	low	high	24	moderately tolerant



SHRUBS: Species Characteristics

Species Characteristics		Native to Wyoming (Y/N)	20-Year Tree Height (ft.)	Mature Height (ft.)	Growth Rate	Precipitation Minimum (in.)	Drought Tolerance	Saline/Alkali tolerance	Calcium Carbonate Tolerance (CaCO ₃)	Root depth, Minimum (in.)	Flooding	
Shrubs (cont'd)												
Common name	Scientific name											
Pear, Ussurian (Chinese)	<i>Pyrus ussuriensis</i>	N	25	45	S	16	medium	low	low	30	intolerant	
Stretchberry (Privet, New Mexico)	<i>Forestiera pubescens</i>	N	6	15	M	9	medium	medium	high	12	moderately tolerant	
Rose, Woods'	<i>Rosa woodsii</i>	Y	6	8	R	12	medium	low	low	12	moderately tolerant	
Sagebrush, Mountain Big	<i>Artemisia tridentata</i> <i>ssp. vaseyana</i>	Y	5	7	S	11	medium	low	high	16	intolerant	
Sagebrush, Silver	<i>Artemisia cana</i>	Y	5	5	M	10	medium	low	medium	20	moderately tolerant	
Sagebrush, Wyoming Big	<i>Artemisia tridentata</i> <i>ssp. wyomingensis</i>	Y	3	3	S	8	high	low	high	20	intolerant	
Saltbush, Fourwing	<i>Atriplex canescens</i>	Y	4	4	S	5	high	high	high	20	intolerant	
Sandcherry	<i>Prunus pumila</i>	Y	6	6	S	15	medium	none	high	24	moderately tolerant	
Sandcherry, Western	<i>Prunus pumila</i> var. <i>besseyi</i>	Y	4	6	M	12	medium	low	high	20	intolerant	
Serviceberry, Saskatoon	<i>Amelanchier alnifolia</i>	Y	10	15	M	12	medium	low	high	24	moderately tolerant	
Silverberry	<i>Elaeagnus commutata</i>	Y	6	12	R	16	high	medium	high	18	moderately tolerant	
Snowberry, Western	<i>Symphoricarpos albus</i>	Y	3	3	M	12	high	medium	high	18	moderately tolerant	
Sumac, Skunkbush	<i>Rhus trilobata</i>	Y	8	10	S	8	high	medium	low	12	intolerant	
Willow, Coyote	<i>Salix exigua</i>	Y	10	10	R	20	low	low	high	20	tolerant	



CONIFERS: Species Characteristics

Species Characteristics		Native to Wyoming (Y/N)	20-Year Tree Height (ft.)	Mature Height (ft.)	Growth Rate	Precipitation Minimum (in.)	Drought Tolerance	Saline/Alkali tolerance	Calcium Carbonate Tolerance (CaCO ₃)	Root depth, Minimum (in.)	Flooding
Conifers											
Common name	Scientific name										
Fir, Douglas	<i>Pseudotsuga menziesii</i>	Y	15	130	M	18	low	low	low	26	intolerant
Fir, Subalpine	<i>Abies lasiocarpa</i>	Y	15	90	S	20	low	none	low	40	tolerant
Fir, White	<i>Abies concolor</i>	Y	20	120	S	18	medium	none	low	40	intolerant
Juniper, Rocky Mountain	<i>Juniperus scopulorum</i>	Y	12	30	S	9	high	low	high	20	intolerant
Pine, Austrian	<i>Pinus nigra</i>	N	17	50	M	12	medium	medium	high	40	intolerant
Pine, Lodgepole	<i>Pinus contorta</i>	Y	17	100	R	18	medium	none	high	20	intolerant
Pine, Limber	<i>Pinus flexilis</i>	Y	10	20	S	13	high	none	medium	20	intolerant
Pine, Pinyon (Pinyon, Twoneedle)	<i>Pinus edulis</i>	Y	10	50	S	9	high	medium	low	20	intolerant
Pine, Ponderosa	<i>Pinus ponderosa</i>	Y	17	130	M	12	high	medium	low	20	intolerant
Pine, Scotch	<i>Pinus sylvestris</i>	N	17	40	R	24	medium	low	low	20	intolerant
Larch, Western	<i>Larix occidentalis</i>	Y	17	150	R	15	low	none	low	20	intolerant
Spruce, White	<i>Picea glauca</i>	Y	12	70	S	10	high	medium	low	30	moderately tolerant
Spruce, Engelmann	<i>Picea engelmannii</i>	Y	14	120	S	20	low	none	high	20	intolerant
Spruce, Colorado Blue	<i>Picea pungens</i>	Y	15	70	S	18	medium	low	high	18	moderately tolerant



PART IV: Wyoming Conservation Tree and Shrub Groups (CTSG)

Group 1 - Wet Favorable Soils

Description:

These are deep to very deep, moderately-well to somewhat poorly drained soils that receive beneficial moisture. These soils have a seasonal high water table or are located in positions that receive enhanced moisture. This soil is called wet favorable because the soil conditions support a wide range of tree species and typically have available moisture present.

Limitations:

Competition from grass and weeds is the principle concern in establishing and managing trees and shrubs. Some species may not be adapted for a high water table.

Group	Soil Depth (cm)	Available Water Capacity (cm) (entire profile or root limiting layer)	CaCO3 Equivalent (% 0-30cm)	pH (0-30cm)	Elec. Cond. (mmhos, 0 -30cm)	SAR (0-30cm)	Depth to Growing Season Water Table (cm)	Associated General Group Concept
1	>=100	>=22.5	<=5	>=5.1 and <=7.8	<=2	<13	>=45 and <120	Wet Favorable
1a	>=100	>=22.5	<=5	>=4.0 and <=5.0	<=2	<13	>=45 and <120	Wet Favorable - Acid
1h	>=100	>=22.5	--	<=7.8	<=4	--	>=45 and <120	Wet Favorable - Organic
1k	>=100	>=22.5	>5 and <=15	>=7.4 and <=8.4	<=4	<13	>=45 and <120	Wet Favorable - Carbonates
1s	>=100	>=15.2 and <=22.4	<=5	>=5.1 and <=7.8	<=2	<13	>=45 and <120	Wet Favorable - Droughty
1sa	>=100	>=15.2 and <=22.4	<5	>=4.0 and <=5.0	<2	<13	>=45 and <120	Wet Favorable - Acid - Droughty
1sk	>=100	>=15.2 and <=22.4	>5 and <=15	>=7.4 and <=8.4	<=4	<13	>=45 and <120	Wet Favorable - Carbonates - Droughty
1ss	>=100	>=7.6 and <=15.2	<=5	>=5.1 and <=7.8	<=2	<13	>=45 and <120	Wet Favorable - Very Droughty
1ssa	>=100	>=7.6 and <=15.2	<=5	>=4.0 and <=5.0	<=2	<13	>=45 and <120	Wet Favorable - Acid - Very Droughty

Group 2 - Wet Soils

Description:

Soils in this group are deep to very deep and very poorly or poorly drained. They are excessively wet or ponded during the growing season. Wetness limits the selection of species suitable for planting on these soils and may reduce the growth rate. This group supports limited suitable species that are adapted to grow in wet conditions.

Limitations:

Wetness and drainage will have an effect on the selection of tree and shrub species for soils in this group. Competition from grass and weeds is the principal concern in establishing and managing trees and shrubs. Spring planting may be delayed because of wet conditions.

Group	Soil Depth (cm)	Available Water Capacity (cm) (entire profile or root limiting layer)	CaCO3 Equivalent (% 0-30cm)	pH (0-30cm)	Elec. Cond. (mmhos, 0 -30cm)	SAR (0-30cm)	Depth to Growing Season Water Table (cm)	Associated General Group Concept
2	>=100	>=7.6	<=5	<=7.8	<=2	<13	>=15 and <45	Wet
2a	>=100	>=7.6	<=5	<=5.0	<=2	<13	>=15 and <45	Wet - Acid
2k	>=100	>=7.6	>5 and <=15	>=7.4 and <=8.4	<=4	<13	>=15 and <45	Wet - Carbonates
2h	>=100	>=22.5	--	<=7.8	<=4	--	>=15 and <45	Wet - Organic



Group 3 - Loamy Soils

Description:

Soils in this group are deep to very deep and well drained. Soils have a high available water capacity and typically have textures ranging from fine sandy loam to clay loam. Coarse fragments are typically less than 35% throughout. The soils in this grouping have high available water capacity and are in upland positions.

Limitations:

Competition from grass and weeds is the principal concern in establishing and managing trees and shrubs on these soils.

Group	Soil Depth (cm)	Available Water Capacity (cm) (entire profile or root limiting layer)	CaCO ₃ Equivalent (% 0-30cm)	pH (0-30cm)	Elec. Cond. (mmhos, 0-30cm)	SAR (0-30cm)	Depth to Growing Season Water Table (cm)	Associated General Group Concept
3	>=100	>=22.5	<=5	>=5.1 and <=7.8	<=2	<13	>=120	Loamy
3a	>=100	>=22.5	<=5	>=4.0 and <=5.0	<=2	<13	>=120	Loamy - Acid

Group 4 - Clayey Soils

Description:

Soils in this group are moderately deep to very deep, have favorable surface textures with clayey subsoils or are clayey throughout. They have moderately slow to very slow permeability. These soils are in upland positions.

Limitations:

High clay content and water availability have an effect on the selection of tree and shrub species for these soils. Competition from grass and weeds is the principal concern in establishing and managing trees and shrubs on these soils.

Group	Soil Depth (cm)	Available Water Capacity (cm) (entire profile or root limiting layer)	CaCO ₃ Equivalent (% 0-30cm)	pH (0-30cm)	Elec. Cond. (mmhos, 0-30cm)	SAR (0-30cm)	Depth to Growing Season Water Table (cm)	Associated General Group Concept	
4	>=50	>=17	<=5	>=5.1 and <=7.8	<=2	<13	>=120	Clayey Favorable	20-50 cm of Non-clayey over >35% Clay
4a	>=50	>=17	<=5	>=4.0 and <=5.0	<=2	<13	>=120	Clayey Favorable - Acid	20-50 cm of Non-clayey over >35% Clay
4sa	>=50	>=10	<=5	>=4.0 and <=5.0	<=2	<13	>=120	Clayey Favorable - Acid	20-50 cm of Non-clayey over >35% Clay
4k	>=50	>=17	>5 and <=15	>=7.4 and <=8.4	<=4	<13	>=120	Clayey Favorable - Carbonates	20-50 cm of Non-clayey over >35% Clay
4c	>=50	>=15.2	<=5	>=5.1 and <=7.8	<=2	<13	>=120	Clayey	>35% clay; 0-20cm can be non-clayey
4ca	>=50	>=15.2	<=5	>=4.0 and <=5.0	<=2	<13	>=120	Clayey - Acid	>35% clay; 0-20cm can be non-clayey
4ck	>=50	>=15.2	>5 and <=15	>=7.4 and <=8.4	<=4	<13	>=120	Clayey - Carbonates	>35% clay; 0-20cm can be non-clayey

Group 5 - Droughty Soils

Description:

Soils in this group are deep to very deep and well drained. Soils in this group have a moderate AWC with textures consisting of loamy sand to very fine sandy loam or consist of loamy to fine textures with a predominance of coarse fragments. These soils are in upland positions and are considered droughty due to reduced available water capacity.



Limitations:

Competition from grass and weeds and abrasion from soil blowing are the principal concerns in establishing and managing trees and shrubs on these soils.

Group	Soil Depth (cm)	Available Water Capacity (cm) (entire profile or root limiting layer)	CaCO ₃ Equivalent (% 0-30cm)	pH (0-30cm)	Elec. Cond. (mmhos, 0-30cm)	SAR (0-30cm)	Depth to Growing Season Water Table (cm)	Associated General Group Concept
5	>=100	>=15.2 and <=22.4	<=5	>=5.1 and <=7.8	<=2	<13	>=120	Droughty
5a	>=100	>=15.2 and <=22.4	<=5	>=4.0 and <=5.0	<=2	<13	>=120	Droughty - Acid
5k	>=100	>=15.2 and <=22.4	>5 and <=15	>=7.4 to <=8.4	<=4	<13	>=120	Droughty - Carbonates

Group 6 - Very Droughty or Moderately Deep Soils

Description:

Soils in this group are well-drained and either consist of coarse textures or loamy to fine textures that have a predominance of coarse fragments. This soil group also consists of soils with a loamy upper part that is moderately deep to a restrictive layer that consists of sandy substratum, gravelly substratum, bedrock, and other layers than can severely restrict root growth. These soils are in upland positions and have very low to moderate available water capacity and are considered very droughty.

Limitations:

Droughtiness and root limitations will have an effect on the selection of tree and shrub species for use on these soils. Competition from grass and weeds is the principal concern in establishing and managing trees and shrubs on these soils.

Group	Soil Depth (cm)	Available Water Capacity (cm) (entire profile or root limiting layer)	CaCO ₃ Equivalent (% 0-30cm)	pH (0-30cm)	Elec. Cond. (mmhos, 0-30cm)	SAR (0-30cm)	Depth to Growing Season Water Table (cm)	Associated General Group Concept
6	>=50	>=7.6 and <=15.1	<=5	>=5.1 and <=7.8	<=2	<13	>=120	Very droughty
6a	>=50	>=7.6 and <=15.1	<=5	>=4.0 and <=5.0	<=2	<13	>=120	Very Droughty - Acid
6k	>=50	>=7.6 and <=15.1	>5 and <=15	>=7.4 and <=8.4	<=4	<13	>=120	Very Droughty - Carbonates
6d	>=50 and <=100	>=15.2	<=5	>=5.1 and <=7.8	<=2	<13	>=120	Droughty - Moderately deep
6da	>=50 and <=100	>=15.2	<=5	>=4.0 and <=5.0	<=2	<13	>=120	Droughty - Moderately deep - Acid
6dk	>=50 and <=100	>=15.2	>5 and <=15	>=7.4 and <=8.4	<=4	<13	>=120	Droughty - Moderately deep - Carbonates

Group 7 - Sandy Soils

Description:

Soils in this group are deep to very deep, somewhat excessively to excessively drained. Textures consist primarily of coarse sand to loamy fine sand. Coarse fragments are minimal throughout. They typically have low to very low available water capacity, and do not normally retain adequate moisture.

Limitations:

Drought conditions and abrasion from soil blowing are the principal concerns in establishing and managing trees and shrubs on these soils. Specialized site preparation and specialized planting methods are needed to establish trees and shrubs. Supplemental water may be essential for successful establishment.



Group	Soil Depth (cm)	Available Water Capacity (cm) (entire profile or root limiting layer)	CaCO ₃ Equivalent (% 0-30cm)	pH (0-30cm)	Elec. Cond. (mmhos, 0-30cm)	SAR (0-30cm)	Depth to Growing Season Water Table (cm)	Associated General Group Concept
7	>=50	>=7.6	<=5	>=5.1 and <=7.8	<=2	<13	>=120	Sandy
7k	>=50	>=7.6	>5 and <=15	>=7.4 and <=8.4	<=4	<13	>=120	Sandy - Carbonates
7a	>=50	>=7.6	<=5	>=4.0 and <=5.0	<=2	<13	>=120	Sandy - Acid
7s	>=50	>=7.6	<=5	>=5.1 and <=7.8	<=2	<13	>=120	Sandy Throughout
7sk	>=50	>=7.6	>5 and <=15	>=7.4 and <=8.4	<=4	<13	>=120	Sandy Throughout - Carbonates
7sa	>=50	>=7.6	<=5	>=4.0 and <=5.0	<=2	<13	>=120	Sandy Throughout - Acid

Group 8 - Loamy-Carbonates Soils

Description:

Soils in this group are calcareous in the upper foot of soil. Textures typically range from fine sandy loam to clay loam.

Limitations:

High calcium carbonate content and competition from grass and weeds are the principal concerns in establishing and managing trees and shrubs on these soils.

Group	Soil Depth (cm)	Available Water Capacity (cm) (entire profile or root limiting layer)	CaCO ₃ Equivalent (% 0-30cm)	pH (0-30cm)	Elec. Cond. (mmhos, 0-30cm)	SAR (0-30cm)	Depth to Growing Season Water Table (cm)	Associated General Group Concept
8	>=100	>=22.5	>5 and <=15	>=7.4 and <=8.4	<=4	<13	>=120	Loamy - Carbonates

Group 9 - Saline/Alkaline Soils

Description:

Soils in this group are affected by salinity and/or sodicity in the upper foot of soil.

Limitations:

Concentrations of salt will severely affect the establishment, vigor, and growth of trees and shrubs on these soils. Concentration of sodium severely affects water infiltration, nutrient availability, and soil structure.

Group	Soil Depth (cm)	Available Water Capacity (cm) (entire profile or root limiting layer)	CaCO ₃ Equivalent (% 0-30cm)	pH (0-30cm)	Elec. Cond. (mmhos, 0-30cm)	SAR (0-30cm)	Depth to Growing Season Water Table (cm)	Associated General Group Concept
9	>=50	>=7.6	--	--	>4 and <=16	>=13	>=45	Dry - Saline/Alkaline
9w	>=50	>=7.6	--	--	>4 and <=16	>=13	<45	Wet - Saline/Alkaline



Group 10 - Unsited

Description

Soils in this group have one or more characteristics such as soil depth, texture, drainage, available water capacity, or salts which severely limits planting, survival, or growth of trees and shrubs.

Limitations

Soils in this group are usually not recommended for farmstead and feedlot shelterbelts, field windbreaks, and plantings for recreation and wildlife. All soils that are generally too wet, too shallow, or have other severely restrictive conditions fall into Group 10.

Group	Soil Depth (cm)	Available Water Capacity (cm) (entire profile or root limiting layer)	CaCO ₃ Equivalent (% 0-30cm)	pH (0-30cm)	Elec. Cond. (mmhos, 0-30cm)	SAR (0-30cm)	Depth to Growing Season Water Table (cm)	Associated General Group Concept
10	<50	<7.6	>15	<4.0 or >8.4	>16	>=25	<15	unsited



TABLE A: SUITABILITY GROUPS AND KEY FEATURES

Group Number	Description
1	Soils Receiving Beneficial Moisture (Seasonal High Water Table)
2	Wet Soils
3	Loamy soils (High AWC, uplands)
4	Clayey soils (Moderate to high AWC, Uplands)
5	Coarse soils (Moderate AWC, droughty, coarse fragments, uplands)
6	Low AWC or Moderately Deep Soils (coarse fragments, very droughty, uplands, bedrock)
7	Sandy Soils (very droughty, uplands)
8	Limy at Surface
9	Saline/Sodic Soils
10	Unsuited

TABLE B: SUBGROUP CODES AND KEY FEATURES

Group Letter	Description
a	Extremely/Very Strongly Acid (upper 12 inches)
h	Organic Soil
k	Carbonates (upper 12 inches)
s	Moderate Available Water Capacity (AWC)
ss	Low AWC
c	Clayey throughout
d	Moderately Deep Soil
w	High Water Table Present
f	Flooding during growing season

The 'f' subgroup can be assigned to any CTSG. For groups 1 and 3 through 9, the flooding frequency must be brief or very brief to receive the 'f' designation, otherwise the designation is 10 because flooding frequency is too severe. For group 2 soils the flooding frequency must be long to get the 'f' designation.



PART V: Adapted Tree and Shrub Species

Planting Zone 1 - Deciduous Trees

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Deciduous Trees	Apricot, Manchurian	<i>Prunus armeniaca</i> var. <i>mandshurica</i>	1, 3*, 4*, 4c*, 5*
	Ash, European Mountain	<i>Sorbus aucuparia</i>	1, 1h, 1s, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*
	Ash, Green	<i>Fraxinus pennsylvanica</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*
	Aspen, Quaking	<i>Populus tremuloides</i>	1, 1a, 1h, 1k, 1s, 1sa, 1sk, 1ss, 1ssa, 3*, 3a*, 4*, 4a*, 4sa*, 4k*, 4c*, 4ca*, 4ck*, 5*, 5a*, 5k*, 6*, 6a*, 6k*, 6d*, 6da*, 6dk*, 7*, 7k*, 7a*, 7s*, 7sk*, 7sa*, 8*, 9*
	Boxelder	<i>Acer negundo</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Buckeye, Ohio	<i>Aesculus glabra</i>	1, 1h, 1s, 1ss, 3*, 4*, 4c*
	Cottonwood, Black	<i>Populus balsamifera</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h
	Cottonwood, Narrowleaf	<i>Populus angustifolia</i>	1, 1h, 1k, 1s, 1sk, 1ss, 9w
	Cottonwood, Plains	<i>Populus deltoides</i>	1, 1h, 1k, 1s, 1sk, 1ss
	Crab apple, Siberian	<i>Malus bacatta</i>	1, 1s, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*
	Elm, American	<i>Ulmus americana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Elm, Siberian	<i>Ulmus pumila</i>	1, 1h, 1s, 1ss, 3*, 4*, 4c*, 5*, 6*, 6d*, 7*, 7s*, 9*
	Hackberry, Common	<i>Celtis occidentalis</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Honeylocust	<i>Gleditsia triacanthos</i>	1, 1h, 1k, 1s, 1sk, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 8*, 9*
	Linden, American (Basswood)	<i>Tilia americana</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3*, 3a*, 5*, 5a*, 6*, 6a*, 6d*, 6da*, 7*, 7a*, 7s*, 7sa*
	Maple, Silver	<i>Acer saccharinum</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 2, 2a, 2h
	Maple, Rocky Mountain	<i>Acer glabrum</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Oak, Bur	<i>Quercus macrocarpa</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3*, 3a*, 4*, 4a*, 4sa*, 4c*, 4ca*, 5*, 5a*, 6*, 6a*, 6d*, 6da*, 7*, 7a*, 7s*, 7sa*
	Poplar, Lombardy	<i>Populus nigra</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Poplar, White	<i>Populus alba</i>	1, 1h, 1s, 1ss, 3*, 4*, 4c*, 5*, 6*, 6d*
Willow, Golden	<i>Salix x sepulcralis</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 2, 2a, 2h	
Willow, Peachleaf	<i>Salix amygdaloides</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h	

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 1 - Shrubs

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Shrubs	Alder, Thinleaf	<i>Alnus incana</i>	1, 1h, 1s, 1ss, 2, 2h
	Bitterbrush, Antelope	<i>Purshia tridentata</i>	3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Buffaloberry, Silver	<i>Shepherdia argentea</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Caragana (Siberian Pea Shrub)	<i>Caragana arborescens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Cherry, Nanking	<i>Prunus tomentosa</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Chokecherry	<i>Prunus virginiana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Almond, Russian	<i>Prunus tenella</i>	1, 1h, 1s, 1ss, 3*, 4*, 4c*, 5*, 6*, 6d*, 7*, 7s*, 9*
	Cinquefoil, Shrubby	<i>Dasiphora fruticosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 8*, 9*, 9w*
	Cotoneaster, Peking	<i>Cotoneaster acutifolius</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Currant, Golden	<i>Ribes aureum</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 8*
	Currant, Wax	<i>Ribes cereum</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Dogwood, Redosier	<i>Cornus sericea</i>	1, 1h, 1s, 1ss, 2, 2h
	Elderberry, Red	<i>Sambucus racemosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Hawthorn, Black	<i>Crataegus douglasii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4c*, 4k*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	False Indigo Bush	<i>Amorpha fruticosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Leadplant	<i>Amorpha canescens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Lilac, Common	<i>Syringa vulgaris</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Mahogany, Curl-leaf Mountain	<i>Cercocarpus ledifolius</i>	3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Maple, Amur	<i>Acer ginnala</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 7*, 7k*, 7s*, 7sk*, 8*
	Oak, Gambel	<i>Quercus gambelii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*
	Plum, American	<i>Prunus americana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Pear, Ussurian	<i>Pyrus ussuriensis</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Stretchberry (Privet, New Mexico)	<i>Forestiera pubescens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Rose, Woods'	<i>Rosa woodsii</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Sagebrush, Mountain Big**	<i>Artemisia tridentata</i> Nutt. ssp. <i>vaseyana</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7s, 7s, 7sk, 8
	Sagebrush, Silver	<i>Artemisia cana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Sagebrush, Wyoming Big	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7s, 7s, 7sk, 8
	Saltbush, Fourwing	<i>Atriplex canescens</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7s, 7s, 7sk, 8, 9
Sandcherry	<i>Prunus pumila</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*	

* indicates that the species will require permanent or supplemental irrigation.



Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Shrubs	Sandcherry, Western	<i>Prunus pumila</i> var. <i>besseyi</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Serviceberry, Saskatoon	<i>Amelanchier alnifolia</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Silverberry	<i>Elaeagnus commutata</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Snowberry, Western	<i>Symphoricarpos albus</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 8*, 9*
	Sumac, Skunkbush	<i>Rhus trilobata</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7sk, 8, 9, 9w
	Willow, Coyote	<i>Salix exigua</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h

Planting Zone 1 - Conifers

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Conifers	Fir, Douglas	<i>Pseudotsuga menziesii</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Fir, Subalpine	<i>Abies lasiocarpa</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3*, 5*, 5a*, 6*, 6a*, 7*, 7a*, 7s*, 7sa*
	Fir, White	<i>Abies concolor</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 7*, 7s*
	Juniper, Rocky Mountain	<i>Juniperus scopulorum</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Pine, Austrian	<i>Pinus nigra</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Pine, Lodgepole	<i>Pinus contorta</i>	1, 1h, 1s, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Pine, Limber	<i>Pinus flexilis</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 7*, 7s*
	Pine, Ponderosa	<i>Pinus ponderosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Pine, Scotch	<i>Pinus sylvestris</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*, 9*
	Larch, Western	<i>Larix occidentalis</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Spruce, White	<i>Picea glauca</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3*, 3a*, 4*, 4a*, 4sa*, 4c*, 4ca*, 5*, 5a*, 6*, 6a*, 6d*, 6da*, 7*, 7a*, 7s*, 7sa*
	Spruce, Engelmann	<i>Picea engelmannii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 8*
Spruce, Colorado Blue	<i>Picea pungens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*	

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 2 - Deciduous Trees

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Deciduous Trees	Apricot, Manchurian	<i>Prunus armeniaca</i> var. <i>mandshurica</i>	1, 3*, 4*, 4c*, 5*
	Ash, European Mountain	<i>Sorbus aucuparia</i>	1, 1h, 1s, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*
	Ash, Green	<i>Fraxinus pennsylvanica</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*
	Aspen, Quaking	<i>Populus tremuloides</i>	1, 1a, 1h, 1k, 1s, 1sa, 1sk, 1ss, 1ssa, 3*, 3a*, 4*, 4a*, 4sa*, 4k*, 4c*, 4ca*, 4ck*, 5*, 5a*, 5k*, 6*, 6a*, 6k*, 6d*, 6da*, 6dk*, 7*, 7k*, 7a*, 7s*, 7sk*, 7sa*, 8*, 9*
	Cottonwood, Narrowleaf	<i>Populus angustifolia</i>	1, 1h, 1k, 1s, 1sk, 1ss, 9w
	Cottonwood, Plains	<i>Populus deltoides</i>	1, 1h, 1k, 1s, 1sk, 1ss
	Crab apple, Siberian	<i>Malus bacatta</i>	1, 1s, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*
	Maple, Rocky Mountain	<i>Acer glabrum</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Poplar, Lombardy	<i>Populus nigra</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Poplar, White	<i>Populus alba</i>	1, 1h, 1s, 1ss, 3*, 4*, 4c*, 5*, 6*, 6d*
	Willow, Golden	<i>Salix x sepulcralis</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 2, 2a, 2h
	Willow, Peachleaf	<i>Salix amygdaloides</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 2 - Shrubs

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Shrubs	Alder, Thinleaf	<i>Alnus incana</i>	1, 1h, 1s, 1ss, 2, 2h
	Bitterbrush, Antelope	<i>Purshia tridentata</i>	3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Buffaloberry, Silver	<i>Shepherdia argentea</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Caragana (Siberian Pea Shrub)	<i>Caragana arborescens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Cherry, Nanking	<i>Prunus tomentosa</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Chokecherry	<i>Prunus virginiana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Cinquefoil, Shrubby	<i>Dasiphora fruticosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 8*, 9*, 9w
	Cotoneaster, Peking	<i>Cotoneaster acutifolius</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Currant, Golden	<i>Ribes aureum</i>	1, 1h, 1k, 1s, 1sk, 3*, 5*, 5k*, 8*
	Currant, Wax	<i>Ribes cereum</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Dogwood, Redosier	<i>Cornus sericea</i>	1, 1h, 1s, 1ss, 2, 2h
	Elderberry, Red	<i>Sambucus racemosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Hawthorn, Black	<i>Crataegus douglasii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4c*, 4k*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Lilac, Common	<i>Syringa vulgaris</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Maple, Amur	<i>Acer ginnala</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 7*, 7k*, 7s*, 7sk*, 8*
	Plum, American	<i>Prunus americana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Pear, Ussurian	<i>Pyrus ussuriensis</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Rose, Woods'	<i>Rosa woodsii</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Sagebrush, Mountain Big**	<i>Artemisia tridentata</i> ssp. <i>va-seyana</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7s, 7s, 7sk, 8
	Sagebrush, Silver	<i>Artemisia cana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Sagebrush, Wyoming big	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Saltbush, Fourwing	<i>Atriplex canescens</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Sandcherry	<i>Prunus pumila</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Sandcherry, Western	<i>Prunus pumila</i> var. <i>besseyi</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Serviceberry, Saskatoon	<i>Amelanchier alnifolia</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Silverberry	<i>Elaeagnus commutata</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Snowberry, Western	<i>Symphoricarpos albus</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 8*, 9*
	Sumac, Skunkbush	<i>Rhus trilobata</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7sk*, 8*, 9*, 9w
Willow, Coyote	<i>Salix exigua</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h	

* indicates that the species will require permanent or supplemental irrigation.

**mountain big sagebrush in zone 2 must be on a site that receives extra moisture (snow catchment)



Planting Zone 2 - Conifers

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Conifers	Fir, Douglas	<i>Pseudotsuga menziesii</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Fir, Subalpine	<i>Abies lasiocarpa</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3*, 5*, 5a*, 6*, 6a*, 7*, 7a*, 7s*, 7sa*
	Fir, White	<i>Abies concolor</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 7*, 7s*
	Juniper, Rocky Mountain	<i>Juniperus scopulorum</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Pine, Austrian	<i>Pinus nigra</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Pine, Lodgepole	<i>Pinus contorta</i>	1, 1h, 1s, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Pine, Limber	<i>Pinus flexilis</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 7*, 7s*
	Pine, Pinyon	<i>Pinus edulis</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4c*, 5*, 6*, 6d*, 7*, 7s*, 9*
	Pine, Ponderosa	<i>Pinus ponderosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*
	Pine, Scotch	<i>Pinus sylvestris</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*, 9*
	Larch, Western	<i>Larix occidentalis</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Spruce, White	<i>Picea glauca</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3*, 3a*, 4*, 4a*, 4sa*, 4c*, 4ca*, 5*, 5a*, 6*, 6a*, 6d*, 6da*, 7*, 7a*, 7s*, 7sa*
	Spruce, Engelmann	<i>Picea engelmannii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 8*
	Spruce, Colorado Blue	<i>Picea pungens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 3 - Deciduous Trees

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Deciduous Trees	Aspen, Quaking	<i>Populus tremuloides</i>	1, 1a, 1h, 1k, 1s, 1sa, 1sk, 1ss, 1ssa, 3, 3a, 4, 4a, 4sa, 4k, 4c, 4ca, 4ck, 5, 5a, 5k, 6, 6a, 6k, 6d, 6da, 6dk, 7, 7k, 7a, 7s, 7sk, 7sa, 8, 9
	Cottonwood, Black	<i>Populus balsamifera</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h
	Cottonwood, Narrowleaf	<i>Populus angustifolia</i>	1, 1h, 1k, 1s, 1sk, 1ss, 9w
	Crab apple, Siberian	<i>Malus</i> spp.	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk
	Maple, Rocky Mountain	<i>Acer glabrum</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Poplar, White	<i>Populus alba</i>	1, 1h, 1s, 1ss, 3, 4, 4c, 5, 6, 6d
	Willow, Golden	<i>Salix x sepulcralis</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 2, 2a, 2h

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 3 - Shrubs

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Shrubs	Alder, Thinleaf	<i>Alnus incana</i>	1, 1h, 1s, 1ss, 2, 2h
	Bitterbrush, Antelope	<i>Purshia tridentata</i>	3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Caragana (Siberian Pea Shrub)	<i>Caragana arborescens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Chokecherry	<i>Prunus virginiana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Cinquefoil, Shrubby	<i>Dasiphora fruticosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 8, 9, 9w
	Currant, Golden	<i>Ribes aureum</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 8
	Currant, Wax	<i>Ribes cereum</i>	1, 1h, 1k, 1s, 1sk, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Dogwood, Redosier	<i>Cornus sericea</i>	1, 1h, 1s, 1ss, 2, 2h
	Elderberry, Red	<i>Sambucus racemosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Hawthorn, Black	<i>Crataegus douglasii</i>	1, 1h, 1s, 1ss, 3, 4, 4c, 4k, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Mahogany, Curl-leaf Mountain	<i>Cercocarpus ledifolius</i>	3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Rose, Woods'	<i>Rosa woodsii</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Sagebrush, Mountain Big	<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7s, 7sk, 8
	Sagebrush, Silver	<i>Artemisia cana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Sagebrush, Wyoming Big	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Sandcherry, Western	<i>Prunus pumila</i> var. <i>besseyi</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Serviceberry, Saskatoon	<i>Amelanchier alnifolia</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Silverberry	<i>Elaeagnus commutata</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Snowberry, Western	<i>Symphoricarpos albus</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 8, 9
	Sumac, Skunkbush	<i>Rhus trilobata</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7sk, 8, 9, 9w
Willow, Coyote	<i>Salix exigua</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h	

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 3 - Conifers

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Conifers	Fir, Douglas	<i>Pseudotsuga menziesii</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Fir, Subalpine	<i>Abies lasiocarpa</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3, 5, 5a, 6, 6a, 7, 7a, 7s, 7sa
	Fir, White	<i>Abies concolor</i>	1, 1h, 1s, 1ss, 3, 5, 6, 7, 7s
	Juniper, Rocky Mountain	<i>Juniperus scopulorum</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Pine, Austrian	<i>Pinus nigra</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 7, 7k, 7s, 7sk, 8, 9
	Pine, Lodgepole	<i>Pinus contorta</i>	1, 1h, 1s, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Pine, Limber	<i>Pinus flexilis</i>	1, 1h, 1s, 1ss, 3, 5, 6, 7, 7s
	Pine, Ponderosa	<i>Pinus ponderosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk
	Pine, Scotch	<i>Pinus sylvestris</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s, 9
	Larch, Western	<i>Larix occidentalis</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Spruce, White	<i>Picea glauca</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3, 3a, 4, 4a, 4sa, 4c, 4ca, 5, 5a, 6, 6a, 6d, 6da, 7, 7a, 7s, 7sa
	Spruce, Engelmann	<i>Picea engelmannii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 8
	Spruce, Colorado Blue	<i>Picea pungens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 4 - Deciduous Trees

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Deciduous Trees	Apricot, Manchurian	<i>Prunus armeniaca</i> var. <i>mandshurica</i>	1, 3*, 4*, 4c*, 5*
	Ash, European Mountain	<i>Sorbus aucuparia</i>	1, 1h, 1s, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*
	Ash, Green	<i>Fraxinus pennsylvanica</i>	1, 2, 2k, 2h, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 7, 7k, 7s, 7sk, 8
	Aspen, Quaking	<i>Populus tremuloides</i>	1, 1a, 1h, 1k, 1s, 1sa, 1sk, 1ss, 1ssa, 3, 3a, 4, 4a, 4sa, 4k, 4c, 4ca, 4ck, 5, 5a, 5k, 6, 6a, 6k, 6d, 6da, 6dk, 7, 7k, 7a, 7s, 7sk, 7sa, 8, 9
	Boxelder	<i>Acer negundo</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 7, 7k, 7s, 7sk, 8, 9
	Buckeye, Ohio	<i>Aesculus glabra</i>	1, 1h, 1s, 1ss, 3*, 4*, 4c*
	Cottonwood, Black	<i>Populus balsamifera</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h
	Cottonwood, Narrowleaf	<i>Populus angustifolia</i>	1, 1h, 1k, 1s, 1sk, 1ss, 9w
	Cottonwood, Plains	<i>Populus deltoides</i>	1, 1h, 1k, 1s, 1sk, 1ss, 9w
	Crab apple, Siberian	<i>Malus bacatta</i>	1, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk
	Elm, American	<i>Ulmus americana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 7, 7k, 7s, 7sk, 8
	Elm, Siberian	<i>Ulmus pumila</i>	1, 1h, 1s, 1ss, 3, 4, 4c, 5, 6, 6d, 7, 7s, 9
	Hackberry, Common	<i>Celtis occidentalis</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 7, 7k, 7s, 7sk, 8
	Honeylocust	<i>Gleditsia triacanthos</i>	1, 1h, 1k, 1s, 1sk, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 8*, 9*
	Linden, American (Basswood)	<i>Tilia americana</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3*, 3a*, 5*, 5a*, 6*, 6a*, 6d*, 6da*, 7*, 7a*, 7s*, 7sa*
	Oak, Bur	<i>Quercus macrocarpa</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3, 3a, 4, 4a, 4sa, 4c, 4ca, 5, 5a, 6, 6a, 6d, 6da, 7, 7a, 7s, 7sa
	Poplar, Lombardy	<i>Populus nigra</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Poplar, White	<i>Populus alba</i>	1, 1h, 1s, 1ss, 3, 4, 4c, 5, 6, 6d
Willow, Golden	<i>Salix xsepulcralis</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 2, 2a, 2h	
Willow, Peachleaf	<i>Salix amygdaloides</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h	

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 4 - Shrubs

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Shrubs	Alder, Thinleaf	<i>Alnus incana</i>	1, 1h, 1s, 1ss, 2, 2h
	Bitterbrush, Antelope	<i>Purshia tridentata</i>	3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Buffaloberry, Silver	<i>Shepherdia argentea</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Caragana (Siberian Pea Shrub)	<i>Caragana arborescens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Cherry, Nanking	<i>Prunus tomentosa</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Chokecherry	<i>Prunus virginiana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Almond, Russian	<i>Prunus tenella</i>	1, 1h, 1s, 1ss, 3, 4, 4c, 5, 6, 6d, 7, 7s
	Cinquefoil, Shrubby	<i>Dasiphora fruticosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 8
	Cotoneaster, Peking	<i>Cotoneaster acutifolius</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Currant, Golden	<i>Ribes aureum</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 8
	Dogwood, Redosier	<i>Cornus sericea</i>	1, 1h, 1s, 1ss, 2, 2h
	Elderberry, Red	<i>Sambucus racemosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Hawthorn, Black	<i>Crataegus douglasii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4c, 4k, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	False Indigo Bush	<i>Amorpha fruticosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Leadplant	<i>Amorpha canescens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Lilac, Common	<i>Syringa vulgaris</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Mahogany, Curl-leaf Mountain	<i>Cercocarpus ledifolius</i>	3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Maple, Amur	<i>Acer ginnala</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 7, 7k, 7s, 7sk, 8
	Oak, Gambel	<i>Quercus gambelii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 7, 7k, 7s, 7sk, 8
	Plum, American	<i>Prunus americana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Pear, Ussurian	<i>Pyrus ussuriensis</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Stretchberry (Privet, New Mexico)	<i>Forestiera pubescens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Rose, Woods'	<i>Rosa woodsii</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Sagebrush, Mountain Big	<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7s, 7sk, 8
	Sagebrush, Silver	<i>Artemisia cana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 4, 4k, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Sagebrush, Wyoming Big	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Saltbush, Fourwing	<i>Atriplex canescens</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Sandcherry	<i>Prunus pumila</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Sandcherry, Western	<i>Prunus pumila</i> var. <i>besseyi</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Serviceberry, Saskatoon	<i>Amelanchier alnifolia</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Silverberry	<i>Elaeagnus commutata</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Snowberry, Western	<i>Symphoricarpos albus</i>	1, 1h, 1k, 1s, 1sk, 1ss, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 8
Sumac, Skunkbush	<i>Rhus trilobata</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7sk, 8, 9, 9w	
Willow, Coyote	<i>Salix exigua</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h	

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 4 - Conifers

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Conifers	Fir, Douglas	<i>Pseudotsuga menziesii</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Fir, Subalpine	<i>Abies lasiocarpa</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3, 3a, 5, 5a, 6, 6a, 7, 7a, 7s, 7sa
	Fir, White	<i>Abies concolor</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Juniper, Rocky Mountain	<i>Juniperus scopulorum</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Pine, Austrian	<i>Pinus nigra</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 7, 7k, 7s, 7sk, 8, 9
	Pine, Lodgepole	<i>Pinus contorta</i>	1, 1h, 1s, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Pine, Limber	<i>Pinus flexilis</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Pine, Ponderosa	<i>Pinus ponderosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk
	Pine, Scotch	<i>Pinus sylvestris</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s, 9
	Larch, Western	<i>Larix occidentalis</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Spruce, White	<i>Picea glauca</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3, 3a, 4, 4a, 4sa, 4c, 4ca, 5, 5a, 6, 6a, 6d, 6da, 7, 7a, 7s, 7sa
	Spruce, Engelmann	<i>Picea engelmannii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 8
	Spruce, Colorado Blue	<i>Picea pungens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 5 - Deciduous Trees

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Deciduous Trees	Apricot, Manchurian	<i>Prunus armeniaca</i> var. <i>mandshurica</i>	1, 3*, 4*, 4c*, 5*
	Ash, European Mountain	<i>Sorbus aucuparia</i>	1, 1h, 1s, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*
	Ash, Green	<i>Fraxinus pennsylvanica</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*
	Aspen, Quaking	<i>Populus tremuloides</i>	1, 1a, 1h, 1k, 1s, 1sa, 1sk, 1ss, 1ssa, 3*, 3a*, 4*, 4a*, 4sa*, 4k*, 4c*, 4ca*, 4ck*, 5*, 5a*, 5k*, 6*, 6a*, 6k*, 6d*, 6da*, 6dk*, 7*, 7k*, 7a*, 7s*, 7sk*, 7sa*, 8*, 9*
	Boxelder	<i>Acer negundo</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Buckeye, Ohio	<i>Aesculus glabra</i>	1, 1h, 1s, 1ss, 3*, 4*, 4c*
	Cottonwood, Black	<i>Populus balsamifera</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h
	Cottonwood, Narrowleaf	<i>Populus angustifolia</i>	1, 1h, 1k, 1s, 1sk, 1ss, 9w
	Cottonwood, Plains	<i>Populus deltoides</i>	1, 1h, 1k, 1s, 1sk, 1ss, 9w
	Crab apple, Siberian	<i>Malus bacatta</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk
	Elm, American	<i>Ulmus americana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*
	Elm, Siberian	<i>Ulmus pumila</i>	1, 1h, 1s, 1ss, 3*, 4*, 4c*, 5*, 6*, 6d*, 7*, 7s*, 9*
	Hackberry, Common	<i>Celtis occidentalis</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*
	Honeylocust	<i>Gleditsia triacanthos</i>	1, 1h, 1k, 1s, 1sk, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 8*, 9*
	Linden, American (Basswood)	<i>Tilia americana</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3*, 3a*, 5*, 5a*, 6*, 6a*, 6d*, 6da*, 7*, 7a*, 7s*, 7sa*
	Maple, Silver	<i>Acer saccharinum</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 2, 2a, 2h
	Maple, Rocky Mountain	<i>Acer glabrum</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Oak, Bur	<i>Quercus macrocarpa</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3*, 3a*, 4*, 4a*, 4sa*, 4c*, 4ca*, 5*, 5a*, 6*, 6a*, 6d*, 6da*, 7*, 7a*, 7s*, 7sa*
	Poplar, Lombardy	<i>Populus nigra</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Poplar, White	<i>Populus alba</i>	1, 1h, 1s, 1ss, 3*, 4*, 4c*, 5*, 6*, 6d*
Willow, Golden	<i>Salix x sepulcralis</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 2, 2a, 2h	
Willow, Peachleaf	<i>Salix amygdaloides</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h	

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 5 - Shrubs

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Shrubs	Alder, Thinleaf	<i>Alnus incana</i>	1, 1h, 1s, 1ss, 2, 2h
	Bitterbrush, Antelope	<i>Purshia tridentata</i>	3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Buffaloberry, Silver	<i>Shepherdia argentea</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Caragana (Siberian Pea Shrub)	<i>Caragana arborescens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Cherry, Nanking	<i>Prunus tomentosa</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Chokecherry	<i>Prunus virginiana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Almond, Russian	<i>Prunus tenella</i>	1, 1h, 1s, 1ss, 3*, 4*, 4c*, 5*, 6*, 6d*, 7*, 7s*
	Cinquefoil, Shrubby	<i>Dasiphora fruticosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 8, 9, 9w
	Cotoneaster, Peking	<i>Cotoneaster acutifolius</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Currant, Golden	<i>Ribes aureum</i>	1, 1h, 1k, 1s, 1sk, 3, 5, 5k, 8
	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
	Currant, Wax	<i>Ribes cereum</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Dogwood, Redosier	<i>Cornus sericea</i>	1, 1h, 1s, 1ss, 2, 2h
	Elderberry, Red	<i>Sambucus racemosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*, 9*
	Hawthorn, Black	<i>Crataegus douglasii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4c*, 4k*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	False Indigo Bush	<i>Amorpha fruticosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Leadplant	<i>Amorpha canescens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Lilac, Common	<i>Syringa vulgaris</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Maple, Amur	<i>Acer ginnala</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 7, 7k, 7s, 7sk, 8, 9
	Oak, Gambel	<i>Quercus gambelii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 7, 7k, 7s, 7sk, 8
	Plum, American	<i>Prunus americana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Pear, Ussurian	<i>Pyrus ussuriensis</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Stretchberry (Privet, New Mexico)	<i>Forestiera pubescens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Rose, Woods'	<i>Rosa woodsii</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Sagebrush, Mountain Big	<i>Artemisia tridentata ssp. vaseyana</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7s, 7sk, 8
	Sagebrush, Silver	<i>Artemisia cana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 4, 4k, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Sagebrush, Wyoming Big	<i>Artemisia tridentata ssp. wyomingensis</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Saltbush, Fourwing	<i>Atriplex canescens</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Sandcherry	<i>Prunus pumila</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 5 - Shrubs

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Shrubs	Sandcherry, Western	<i>Prunus pumila</i> var. <i>besseyi</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Serviceberry, Saskatoon	<i>Amelanchier alnifolia</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Silverberry	<i>Elaeagnus commutata</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Snowberry, Western	<i>Symphoricarpos albus</i>	1, 1h, 1k, 1s, 1sk, 1ss, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 8
	Sumac, Skunkbush	<i>Rhus trilobata</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7sk, 8, 9, 9w
	Willow, Coyote	<i>Salix exigua</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h

Planting Zone 5 - Conifers

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Conifers	Fir, Douglas	<i>Pseudotsuga menziesii</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Fir, Subalpine	<i>Abies lasiocarpa</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3*, 5*, 5a*, 6*, 6a*, 7*, 7a*, 7s*, 7sa*
	Fir, White	<i>Abies concolor</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 7*, 7s*
	Juniper, Rocky Mountain	<i>Juniperus scopulorum</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Pine, Austrian	<i>Pinus nigra</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 7, 7k, 7s, 7sk, 8, 9
	Pine, Lodgepole	<i>Pinus contorta</i>	1, 1h, 1s, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Pine, Limber	<i>Pinus flexilis</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Pine, Ponderosa	<i>Pinus ponderosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4c, 4k, 4ck, 5, 5k, 6, 6d, 6k, 6dk, 7, 7k, 7s, 7sk
	Pine, Scotch	<i>Pinus sylvestris</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s, 9
	Larch, Western	<i>Larix occidentalis</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Spruce, White	<i>Picea glauca</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3, 3a, 4, 4a, 4sa, 4c, 4ca, 5, 5a, 6, 6a, 6d, 6da, 7, 7a, 7s, 7sa
	Spruce, Engelmann	<i>Picea engelmannii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 8*
	Spruce, Colorado Blue	<i>Picea pungens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 6 - Deciduous Trees

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Deciduous Trees	Apricot, Manchurian	<i>Prunus armeniaca</i> var. <i>mandshurica</i>	1, 3*, 4*, 4c*, 5*
	Ash, European Mountain	<i>Sorbus aucuparia</i>	1, 1h, 1s, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 7*, 7k*, 7s*, 7sk*, 8*
	Ash, Green	<i>Fraxinus pennsylvanica</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 7, 7k, 7s, 7sk, 8
	Aspen, Quaking	<i>Populus tremuloides</i>	1, 1a, 1h, 1k, 1s, 1sa, 1sk, 1ss, 1ssa, 3*, 3a*, 4*, 4a*, 4sa*, 4k*, 4c*, 4ca*, 4ck*, 5*, 5a*, 5k*, 6*, 6a*, 6k*, 6d*, 6da*, 6dk*, 7*, 7k*, 7a*, 7s*, 7sk*, 7sa*, 8*, 9*
	Cottonwood, Narrowleaf	<i>Populus angustifolia</i>	1, 1h, 1k, 1s, 1sk, 1ss, 9w
	Cottonwood, Plains	<i>Populus deltoides</i>	1, 1h, 1k, 1s, 1sk, 1ss, 9w
	Crab apple, Siberian	<i>Malus bacatta</i>	1, 1h, 1k, 1s, 1sk, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk
	Maple, Rocky Mountain	<i>Acer glabrum</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Poplar, Lombardy	<i>Populus nigra</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*
	Poplar, White	<i>Populus alba</i>	1, 1h, 1s, 1ss, 3*, 4*, 4c*, 5*, 6*, 6d*
	Willow, Golden	<i>Salix x sepulcralis</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 2, 2a, 2h
	Willow, Peachleaf	<i>Salix amygdaloides</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h

Planting Zone 6 - Shrubs

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Shrubs	Alder, Thinleaf	<i>Alnus incana</i>	1, 1h, 1s, 1ss, 2, 2h
	Bitterbrush, Antelope	<i>Purshia tridentata</i>	3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Buffaloberry, Silver	<i>Shepherdia argentea</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Caragana (Siberian Pea Shrub)	<i>Caragana arborescens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Cherry, Nanking	<i>Prunus tomentosa</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Chokecherry	<i>Prunus virginiana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Cinquefoil, Shrubby	<i>Dasiphora fruticosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 8
	Cotoneaster, Peking	<i>Cotoneaster acutifolius</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Currant, Golden	<i>Ribes aureum</i>	1, 1h, 1k, 1s, 1sk, 3, 5, 5k, 8
	Currant, Wax	<i>Ribes cereum</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Dogwood, Redosier	<i>Cornus sericea</i>	1, 1h, 1s, 1ss, 2, 2h
	Elderberry, Red	<i>Sambucus racemosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Hawthorn, Black	<i>Crataegus douglasii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4c, 4k, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Lilac, Common	<i>Syringa vulgaris</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Maple, Amur	<i>Acer ginnala</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 7, 7k, 7s, 7sk, 8

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 6 - Shrubs

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Shrubs	Oak, Gambel	<i>Quercus gambelii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 7, 7k, 7s, 7sk, 8
	Plum, American	<i>Prunus americana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Pear, Ussurian	<i>Pyrus ussuriensis</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Rose, Woods'	<i>Rosa woodsii</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Sagebrush, Mountain Big	<i>Artemisia tridentata</i> ssp. <i>vaseyana</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7s, 7s, 7sk, 8
	Sagebrush, Silver	<i>Artemisia cana</i>	1, 1h, 1k, 1s, 1sk, 1ss, 4, 4k, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Sagebrush, Wyoming Big	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Saltbush, Fourwing	<i>Atriplex canescens</i>	3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Sandcherry	<i>Prunus pumila</i>	1, 1h, 1k, 1s, 1sk, 1ss, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Sandcherry, Western	<i>Prunus pumila</i> var. <i>besseyi</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Serviceberry, Saskatoon	<i>Amelanchier alnifolia</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Silverberry	<i>Elaeagnus commutata</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Snowberry, Western	<i>Symphoricarpos albus</i>	1, 1h, 1k, 1s, 1sk, 1ss, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 8
	Sumac, Skunkbush	<i>Rhus trilobata</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7sk, 8, 9, 9w
	Willow, Coyote	<i>Salix exigua</i>	1, 1h, 1k, 1s, 1sk, 1ss, 2, 2k, 2h

* indicates that the species will require permanent or supplemental irrigation.



Planting Zone 6 - Conifers

Type	Common Name	Scientific name	Conservation Tree and Shrub Groups (CTSG)
Conifers	Fir, Douglas	<i>Pseudotsuga menziesii</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 6d*, 7*, 7s*
	Fir, Subalpine	<i>Abies lasiocarpa</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3*, 5*, 5a*, 6*, 6a*, 7*, 7a*, 7s*, 7sa*
	Fir, White	<i>Abies concolor</i>	1, 1h, 1s, 1ss, 3*, 5*, 6*, 7*, 7s*
	Juniper, Rocky Mountain	<i>Juniperus scopulorum</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8, 9
	Pine, Austrian	<i>Pinus nigra</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 5, 5k, 6, 6k, 7, 7k, 7s, 7sk, 8, 9
	Pine, Lodgepole	<i>Pinus contorta</i>	1, 1h, 1s, 1ss, 3, 4, 4k, 4c, 4ck, 5, 5k, 6, 6k, 6d, 6dk, 7, 7k, 7s, 7sk, 8
	Pine, Limber	<i>Pinus flexilis</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Pine, Pinyon (Pinyon, Twoneedle)	<i>Pinus edulis</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4c, 5, 6, 6d, 7, 7s, 9
	Pine, Ponderosa	<i>Pinus ponderosa</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3, 4, 4c, 4k, 4ck, 5, 5k, 6, 6d, 6k, 6dk, 7, 7k, 7s, 7sk
	Pine, Scotch	<i>Pinus sylvestris</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s, 9
	Larch, Western	<i>Larix occidentalis</i>	1, 1h, 1s, 1ss, 3, 5, 6, 6d, 7, 7s
	Spruce, White	<i>Picea glauca</i>	1, 1a, 1h, 1s, 1sa, 1ss, 1ssa, 3*, 3a*, 4*, 4a*, 4sa*, 4c*, 4ca*, 5*, 5a*, 6*, 6a*, 6d*, 6da*, 7*, 7a*, 7s*, 7sa*
	Spruce, Engelmann	<i>Picea engelmannii</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 8*
	Spruce, Colorado Blue	<i>Picea pungens</i>	1, 1h, 1k, 1s, 1sk, 1ss, 3*, 4*, 4k*, 4c*, 4ck*, 5*, 5k*, 6*, 6k*, 6d*, 6dk*, 7*, 7k*, 7s*, 7sk*, 8*

* indicates that the species will require permanent or supplemental irrigation.



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