SPECIES LIST and ASSOCIATED CONSERVATION TREE/SHRUB SUITABILITY GROUP (CTSG)

COMMON NAME *SCIENTIFIC NAME*	CTSG	PLANT ADAPTATION ZONES
Almond, Russian *Prunus tenella*	1, 3, 4, 5	a, b, d – j
Arborvitae, Siberian *Thuja occidentalis*	1, 2	a, b
Ash, Green *Fraxinus pennsylvanica*	1, 3, 4, 5, 6	All
Buffaloberry, Silver *Shepherdia argentea*	1, 2, 3, 4, 5, 6, 7, 8, 9	All
Caragana *Caragana arborescens*	1, 3, 4, 5, 6, 7, 8, 9	All
Cherry, Nanking *Prunus tomentosa*	1, 3, 4, 5	a, b, d – j
Cherry, Black *Prunus serotina*	1, 3, 4, 5	d – j
Chokecherry, Common *Prunus virginiana*	1, 2, 3, 4, 5, 6	All
Cotoneaster, Centennial *Cotoneaster integerrima*	1, 3, 5	a, b, d – j
Cotoneaster, Peking *Cotoneaster acutifolia*	1, 3, 5	All
Cottonwood, Plains *Populus sargentii*	1, 2, 3	All
Crabapple, Manchurian *Malus baccata mandshurica*	1, 3, 4, 5, 6	a, b, d – j
Crabapple, Siberian *Malus baccata*	1, 3, 4, 5, 6	All
Currant, Golden *Ribes odoratum*	1, 2, 3, 4, 5, 6, 8, 9	All
Dogwood, Redosier *Cornus stolonifera*	1, 2	All
Elm, Siberian *Ulmus pumila*	1, 2, 3, 4, 5, 6, 7, 8, 9	All
Fir, Douglas *Pseudotsuga menziesii*	1, 3, 4, 5	All

COMMON NAME *SCIENTIFIC NAME*	CTSG	PLANT ADAPTATION ZONES
Hackberry, Common *Celtis occidentalis*	1, 3, 4, 5	a, b, d – j
Hawthorn, Arnold *Crataegus arnoldiana*	1, 3, 4, 5	a, b, j
Honeylocust *Gleditsia triacanthos*	1, 2, 3, 4, 5	a, b, j
Honeysuckle, Blueleaf *Lonicera korolkowii*	1, 3, 4, 5, 6, 8	a, b, d – j
Juniper, Rocky Mountain *Juniperous scopulorum*	1, 2, 3, 4, 5, 6, 7, 9	All
Lilac, Common *Syringa vulgaris*	1, 3, 4, 5, 6, 7, 8	All
Lilac, Late *Syringa villosa*	1, 3, 4, 5	All
Maple, Amur *Acer ginnala*	1, 3, 4, 5	a, b, d – j
Oak, Bur *Quercus macrocarpa*	1, 3, 4, 5	a – d, g – j
Olive, Russian *Eleagnus angustifolia*	3, 4, 5, 6, 7, 8	All
Pine, Limber *Pinus flexilis*	1, 3, 4, 5, 6, 7, 8	a, b, e – j
Pine, Ponderosa *Pinus ponderosa*	1, 3, 4, 5, 6, 7, 8	a – d, f – j
Pine, Scotch *Pinus sylvestris*	1, 3, 4, 5	a – d, f – j
Plum, American *Prunus americana*	1, 3, 4, 5	All
Poplar, White *Populus alba*	1, 2, 3, 5	All
Potentilla *Potentilla fruticosa*	1, 3, 4, 5, 6, 7, 8	All
Redcedar, Eastern *Juniperous virginiana*	1, 2, 3, 4, 5, 6, 7, 8, 9	f – j
Rose, Woods *Rosa woodsii*	1, 3, 4, 5, 6	All

COMMON NAME *SCIENTIFIC NAME*	CTSG	PLANT ADAPTATION ZONES
Sandcherry, Western *Prunus besseyi*	1, 3, 5, 6, 7	a, b, d – j
Sea-buckthorn *Hippophae rhamnoides*	1, 3, 4, 5, 6, 8, 9	a, b, d – j
Serviceberry, Saskatoon Amelanchier alnifolia	1, 3, 4, 5, 6	a, b, d – j
Silverberry *Eleagnus commutata*	1, 3, 4, 5, 6, 9	All
Spruce, Black Hills *Picea densata*	1, 2, 3, 4, 5	All
Spruce, Colorado Blue *Picea pungens*	1, 2, 3, 4, 5	All
Sumac, Skunkbush *Rhus trilobata*	1, 3, 4, 5, 6, 7, 8, 9	All
Willow, Golden *Salix alba*	1, 2	All
Willow, Purple *Salix purpurea*	1, 2	All

PLANT ADAPTATION ZONES

Plant adaptation zone is a classification system developed by the Natural Resources Conservation Service in Montana. The state is divided into 10 zones identified as letters “a through j” (SEE ATTACHED MAP). Each zone delineates an area where environmental conditions are generally uniform throughout. Within a particular zone, moisture and temperature regimes are relatively consistent with respect to changes in elevation and aspect. The zone numbers are only used to designate areas and imply no order of limitation or severity. This site classification system integrates length of growing season, minimum winter temperature and chinook frequency. Species are recommended for planting only in listed zones.

NOTE: Zone boundaries are generally along Major Land Resource Unit (MLRU) boundaries.

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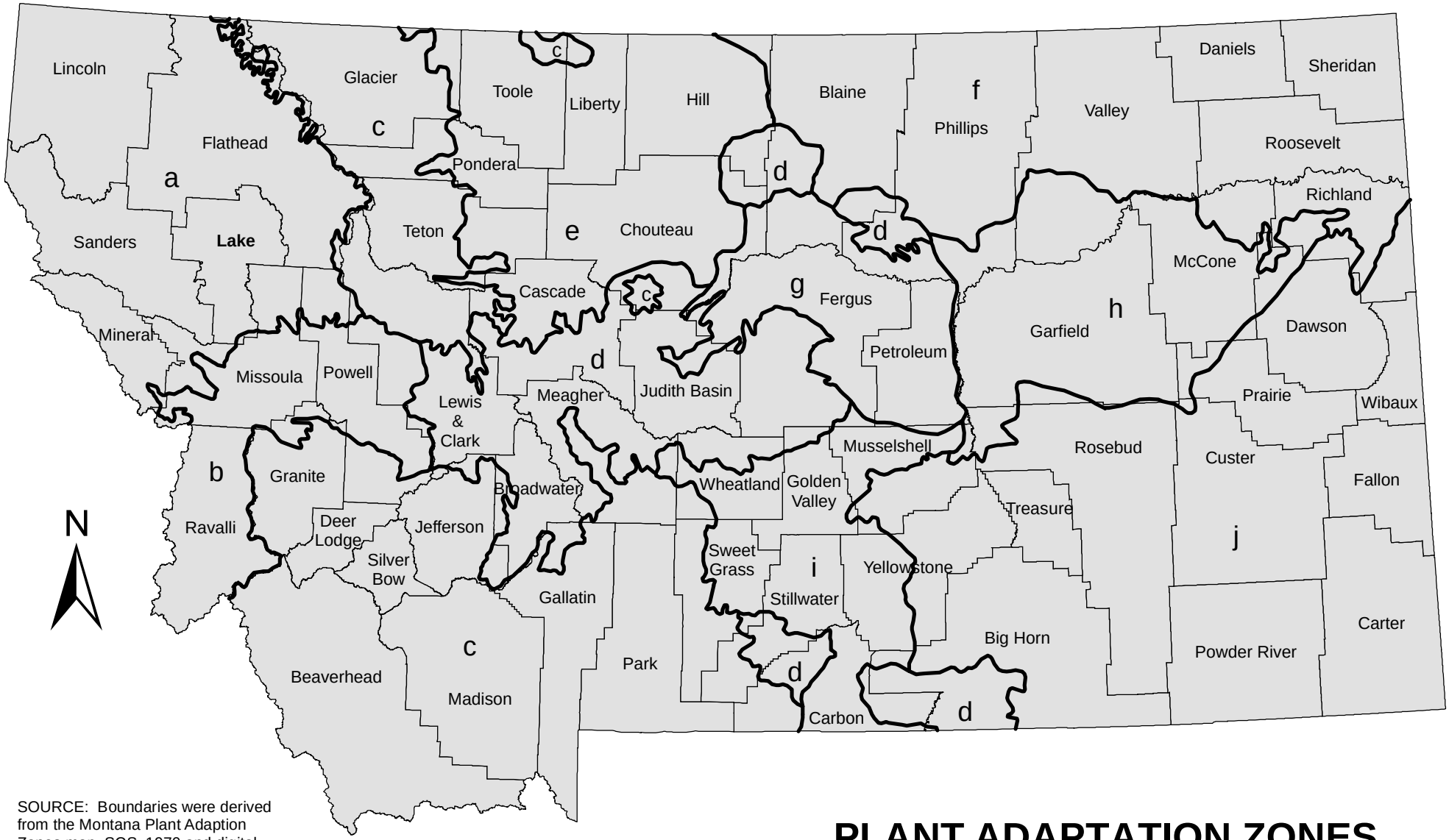
United States Department of Agriculture

NRCS Natural Resources Conservation Service



SOURCE: Boundaries were derived from the Montana Plant Adaption Zones map, SCS, 1970 and digital 1:1,000,000 scale NRCS MLRU data.

0 25 50 100 150 200 Miles

Montana State Plane Projection

PLANT ADAPTATION ZONES
Montana

NRCS STATE OFFICE, BOZEMAN, MT

January 2000

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Conservation Tree/Shrub Suitability Groups (CTSG) Key

1. ≥ 35.4 inches to Growing Season Water Table 3
1. < 35.4 inches to Growing Season Water Table

   2. Temperature regime cryic or pergelic and <1 month wet soil moisture during growing season or
      Temperature regime isofrigid, frigid, or mesic and ≤2 consecutive months wet soil moisture during growing season **or**
      Temperature regime isofrigic, frigid, or mesic and <3 total months wet soil moisture during growing season **or**
      Any temperature regime and <3 total months wet soil moisture during growing season .....**CTSG 2**
   2. Temperature regime cryic or pergelic and >0 month wet soil moisture during growing season or
      Temperature regime isofrigid, frigid, or mesic and >2 consecutive months wet soil moisture during growing season **or**
      Temperature regime isofrigid, frigid, or mesic and ≥3 total months wet soil moisture during growing season **or**
      Temperature regime thermic, hyperthermic, isothermic, isohyperthermic, or isomesic and ≥3 total months wet soil moisture during growing season .....**CTSG 10**

3. ≥ 59 inches to growing season water table and frequent or occasional flooding ≥2 months during growing season with a duration of brief, long, or very long.....**CTSG 1**
3. ≥ 59 inches to growing season water table or < 59 inches for <2 months during growing season.....4

   4. Ksat for one or more horizons > 5.9 inches thick with a top depth >0: low ≥ 0.06 & ≤ 0.2 (slow), high ≤ 2 (moderate) **or**
      Ksat 0-59 inches: minimum low ≥ 0.06 & ≤ 0.2 (slow), maximum high ≤ 2 (moderate) **or**
      Ksat for one or more horizons > 5.9 inches thick with a top depth >0: high ≤ 0.06 (very slow) and >39.4 inches to root restriction **or**
      Ksat 0-59 inches: maximum high ≤ 0.06 (very slow) .....**CTSG 4**
   4.. Ksat 0-59 inches: minimum low ≥ 0.2 (mod slow), maximum high ≤ 20 (rapid) 5

5. AWC ≥ 7.5 6
5. AWC < 7.5 6

   6. $CaCO_3$ ≤5 .....**CTSG 3**
   6. $CaCO_3$ >5 7

7. All horizons 0-59 inches have sandy texture .....**CTSG 7**
7. All horizons 0-59 inches do not have sandy texture .....**CTSG 8**

   8. Bottom horizon is sandy/gravelly **or** Ksat high ≥ 20 (very rapid) **or**
      Ksat 0-39.4 inches: minimum low ≥ 0.2 (mod slow), maximum high > 2 & ≤ 6 (mod rapid).....**CTSG 6**
   8. Bottom horizon is not sandy/gravely 9

9. EC >4 .....**CTSG 9**
9. EC ≤4 .....**CTSG 5**

10. .....**CTSG 10**

CONSERVATION TREE/SHRUB SUITABILITY GROUPS (CTSG)

TABLE A — Suitability Groups and Key Features

GROUP NUMBER	DESCRIPTION
1	Soils Receiving Beneficial Moisture (Flooding, Seasonal High Water Table)
2	Wet Soils
3	High Available Water Capacity (AWC)
4	Slow/Moderate Permeability (Uplands)
5	Low/Moderate AWC
6	Moderately Deep Soils
7	Droughty Soils
8	Limy at Surface
9	Saline/Sodic Soils
10	Unsuited

TABLE B — Subgroup Codes and Key Features

GENERALLY SOIL PROPERTIES IN THE UPPER 12 INCHES

GROUP LETTER	DESCRIPTION
A	Strong/Very Strongly Acid
H	Histic (Organic) Soil
K	Calcareous Soil
KK	Violently Calcareous Soil (Calcic Horizon)
S	Low/Moderate Available Water Capacity (AWC)
C	Clayey Surface/Subsoil (Slow/Moderate Permeability)
CC	Clayey Surface/Subsoil (Very Slow Permeability)
D	Moderately Deep Soil
G	Sandy/Gravelly Horizon
L	Slightly/Moderately Saline Soil
N	Slightly/Moderately Sodic Soil
W	High Water Table Present
NW	Sodic Soil with High Water Table

CONSERVATION TREE/SHRUB SUITABILITY GROUPS (CTSG)

GROUP 1 — Soils Receiving Beneficial Moisture

Description

These are deep, well drained to somewhat poorly drained soils that receive beneficial moisture from favorable landscape positions, flooding, runoff from adjacent land, or they have a beneficial seasonally high water table during the spring.

Limitations

Competition from grass and weeds is the principle concern in establishing and managing trees and shrubs. Occasionally, somewhat poorly drained soils may have excessive water for some species.

Subgroups

GROUP	SOIL DEPTH (in.)	AVAILABLE WATER CAPACITY (in.)	$CaCO_3$ EQUIVALENT (%, 0-12 in.)	pH (0-12 in.)	ELEC. COND. (mmhos, 0-12 in.)	DEPTH TO GROWING SEASON WATER TABLE (in.)	SATURATED HYDRAULIC CONDUCTIVITY (in. hr^{-1}) (SEE NOTES)
1	≥40	≥7.5	≤5	5.6-8.4	<4	≥36, <60 OR ≥60 and frequent or occasional flooding ≥2 months during growing season with a duration of brief, long, or very long	≥0.2, ≤20; 0-60 in. (or first restrictive layer)
1A	≥40	≥7.5	≤5	4.5-5.5	<4		≥0.2, ≤20; 0-60 in. (or first restrictive layer)
1H	≥20	≥7.5	--	≤7.8	<4		Histosol OR Texture-in-lieu-of is "peat," "muck," or "mucky peat"
1K	≥40	≥7.5	>5, ≤15	6.5-8.4	<4		≥0.2, ≤20; 0-60 in. (or first restrictive layer)
1KK	≥40	≥7.5	>15, ≤40	6.5-8.4	<4		≥0.2, ≤20; 0-60 in. (or first restrictive layer)
1S	≥40	3.75-7.5	≤5	5.6-8.4	<4		≥0.2, ≤20; 0-60 in. (or first restrictive layer)
1SK	≥40	3.75-7.5	>5, ≤15	6.5-8.4	<4		≥0.2, ≤20; 0-60 in. (or first restrictive layer)
1SKK	≥40	3.75-7.5	>15, ≤40	7.9-8.4	<4		≥0.2, ≤20; 0-60 in. (or first restrictive layer)

Adapted Species – Group 1

COMMON NAME	20 YR. TREE/SHRUB HEIGHT (feet)	CONSERVATION TREE/SHRUB SUITABILITY GROUP (CTSG)
SHRUBS:		
Almond, Russian	5	1, 1K, 1S, 1SK
Buffaloberry, Silver	10	1, 1K, 1KK, 1S, 1SK, 1SKK
Caragana	12	1, 1K, 1KK, 1S, 1SK, 1SKK
Cherry, Nanking	7	1, 1K, 1S, 1SK
Chokecherry, Common	10	1, 1H, 1K, 1KK, 1S, 1SK, 1SKK
Cotoneaster, Centennial	9	1, 1K, 1S, 1SK
Cotoneaster Peking	7	1, 1K, 1S, 1SK
Currant, Golden	6	1, 1H, 1K, 1KK, 1S, 1SK, 1SKK
Dogwood, Redoiser	7	1, 1H, 1K, 1S, 1SK
Honeysuckle, Blueleaf	10	1, 1K, 1S, 1SK
Lilac, Common	6	1, 1K, 1KK, 1S, 1SK, 1SKK
Lilac, Late	7	1, 1K, 1KK, 1S, 1SK, 1SKK
Plum, American	10	1, 1K, 1S, 1SK
Potentilla	3	1, 1K, 1S, 1SK
Rose, Woods	4	1, 1K, 1S, 1SK
Sandcherry, Western	4	1, 1K, 1S, 1SK
Sea-buckthorn	7	1, 1K, 1KK, 1S, 1SK, 1SKK
Serviceberry, Saskatoon	8	1, 1K, 1S, 1SK
Silverberry	6	1, 1K, 1KK, 1S, 1SK, 1SKK
Sumac, Skunkbush	8	1, 1K, 1KK, 1S, 1SK, 1SKK
EVERGREENS:		
Arborvitae, Siberian	11	1, 1A, 1H, 1K
Fir, Douglas	15	1, 1A, 1K, 1KK, 1S, 1SK, 1SKK
Juniper, Rocky Mountain	12	1, 1A, 1K, 1KK, 1S, 1SK, 1SKK
Pine, Limber	16	1, 1A, 1K, 1KK, 1S, 1SK, 1SKK
Pine, Ponderosa	17	1, 1A, 1K, 1KK, 1S, 1SK, 1SKK
Pine, Scotch	17	1, 1A, 1K, 1S, 1SK
Redcedar, Eastern	10	1, 1A, 1K, 1KK, 1S, 1SK, 1SKK
Spruce, Black Hills	15	1, 1A, 1H, 1K, 1S, 1SK
Spruce, Colorado Blue	15	1, 1A, 1H, 1K, 1S, 1SK
DECIDUOUS:		
Ash, Green	18	1, 1K, 1KK, 1S, 1SK, 1SKK
Cherry, Black	15	1, 1K, 1S, 1SK
Cottonwood, Plains	18	1, 1K, 1S, 1SK
Crabapple, Manchurian	15	1, 1K, 1S, 1SK
Crabapple, Siberian	15	1, 1K, 1S, 1SK
Elm, Siberian	25	1, 1K, 1KK, 1S, 1SK, 1SKK
Hackberry, Common	13	1, 1K, 1S, 1SK
Hawthorn, Arnold	9	1, 1K, 1S, 1SK
Honeylocust	15	1, 1K, 1S, 1SK
Maple, Amur	10	1, 1K, 1S, 1SK
Oak, Bur	16	1, 1K, 1S, 1SK
Poplar, White	25	1, 1K, 1S, 1SK
Willow, Golden	25	1, 1H, 1K, 1S, 1K
Willow, Purple	8	1, 1H, 1K, 1S, 1K

CONSERVATION TREE/SHRUB SUITABILITY GROUPS (CTSG)

GROUP 2 — Wet Soils

Description

Soils in this group are deep, poorly drained or somewhat poorly drained, and excessively wet or ponded during the spring or overflow periods. Wetness limits the selection of species suitable for planting on these soils and may reduce the growth rate.

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. Soil blowing is a concern on the sandy and organic soils.

Subgroups

GROUP	SOIL DEPTH (in.)	AVAILABLE WATER CAPACITY (in.)	$CaCO_3$ EQUIVALENT (%, 0-12 in.)	pH (0-12 in.)	ELEC. COND. (mmhos, 0-12 in.)	DEPTH TO GROWING SEASON WATER TABLE (in.)	SATURATED HYDRAULIC CONDUCTIVITY (in. hr^{-1}) (SEE NOTES)
2	≥40	≥2.0	≤5	5.6-8.4	<4	≥18, <36 OR <36 and <3 months wet soil moisture during growing season	--
2A	≥40	≥2.0	≤5	4.5-5.5	<4		--
2K	≥40	≥2.0	>5, ≤15	6.5-8.4	<4		--
2KK	≥40	≥2.0	>15, ≤40	6.5-8.4	<4		--
2H	≥40	≥7.5	--	≤7.8	<4		Histosol OR Texture-in-lieu-of is "mucky peat," "muck," or "peat"

Adapted Species – Group 2

COMMON NAME	20 YR. TREE/SHRUB HEIGHT (feet)	CONSERVATION TREE/SHRUB SUITABILITY GROUP (CTSG)
SHRUBS:		
Buffaloberry, Silver	10	2, 2K, 2KK
Chokecherry, Common	10	2, 2K, 2KK, 2H
Currant, Golden	6	2, 2K, 2KK, 2H
Dogwood, Redoiser	7	2, 2K, 2H
EVERGREENS:		
Arborvitae, Siberian	11	2, 2A, 2K, 2H
Juniper, Rocky Mountain	12	2, 2A, 2K, 2KK, 2H
Redcedar, Eastern	10	2, 2A, 2K, 2KK, 2H
Spruce, Black Hills	15	2, 2A, 2K, 2H
Spruce, Colorado Blue	15	2, 2A, 2K, 2H
DECIDUOUS:		
Cottonwood, Plains	18	2, 2K
Elm, Siberian	25	2, 2K, 2KK
Honeylocust	15	2, 2K
Poplar, White	25	2, 2K
Willow, Golden	25	2, 2K, 2H
Willow, Purple	8	2, 2K, 2H

CONSERVATION TREE/SHRUB SUITABILITY GROUPS (CTSG)

GROUP 3 — High Available Water Capacity (AWC)

Description

Soils in this group are deep, well drained soils, with loamy and fine sandy textures, and high available water capacity.

Limitations

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

Subgroups

GROUP	SOIL DEPTH (in.)	AVAILABLE WATER CAPACITY (in.)	$CaCO_3$ EQUIVALENT (%, 0-12 in.)	pH (0-12 in.)	ELEC. COND. (mmhos, 0-12 in.)	DEPTH TO GROWING SEASON WATER TABLE (in.)	SATURATED HYDRAULIC CONDUCTIVITY (in. hr^{-1}) (SEE NOTES)
3	≥40	≥7.5	≤5	5.6-8.4	<4	≥60 AND Frequent, occasional, or no flooding <2 months during growing season with a duration of brief, long, or very long	Min. low K_{sat} ≥0.2, Max. high K_{sat} ≥2.0 and ≤20; 0-60 in. (or first restrictive layer) AND Bottom horizon is not sandy/gravelly
3A	≥40	≥7.5	≤5	4.5-5.5	<4		

Adapted Species – Group 3

COMMON NAME	20 YR. TREE/SHRUB HEIGHT (feet)	CONSERVATION TREE/SHRUB SUITABILITY GROUP (CTSG)
SHRUBS:		
Almond, Russian	5	3
Buffaloberry, Silver	10	3
Caragana	12	3
Cherry, Nanking	7	3
Chokecherry, Common	10	3
Cotoneaster, Centennial	9	3
Cotoneaster, Peking	7	3
Currant, Golden	6	3
Honeysuckle, Blueleaf	10	3
Lilac, Common	6	3
Lilac, Late	7	3
Plum, American	10	3
Potentilla	3	3
Rose, Woods	4	3
Sandcherry, Western	4	3
Sea-buckthorn	7	3
Serviceberry, Saskatoon	8	3
Silverberry	6	3
Sumac, Skunkbush	8	3
EVERGREENS:		
Fir, Douglas	15	3, 3A
Juniper, Rocky Mountain	12	3, 3A
Pine, Limber	16	3, 3A
Pine, Ponderosa	17	3, 3A
Pine, Scotch	17	3, 3A
Redcedar, Eastern	10	3, 3A
Spruce, Black Hills	15	3, 3A
Spruce, Colorado Blue	15	3, 3A
DECIDUOUS:		
Ash, Green	18	3
Cherry, Black	15	3
Cottonwood, Plains	18	3
Crabapple, Manchurian	15	3
Crabapple, Siberian	15	3
Elm, Siberian	25	3
Hackberry, Common	13	3
Hawthorn, Arnold	9	3
Honeylocust	15	3
Maple, Amur	10	3
Oak, Bur	16	3
Olive, Russian	17	3
Poplar, White	25	3

CONSERVATION TREE/SHRUB SUITABILITY GROUPS (CTSG)

GROUP 4 — Slow/Moderate Permeability (Uplands)

Description

Soils in this group are moderately deep and deep, have loamy surface textures with clayey subsoils, have moderate to very slow permeability, and occur on uplands.

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.

Subgroups

GROUP	SOIL DEPTH (in.)	AVAILABLE WATER CAPACITY (in.)	$CaCO_3$ EQUIVALENT (%, 0-12 in.)	pH (0-12 in.)	ELEC. COND. (mmhos, 0-12 in.)	DEPTH TO GROWING SEASON WATER TABLE (in.)	SATURATED HYDRAULIC CONDUCTIVITY (in. hr^{-1}) (SEE NOTES)
4	≥20	≥4.75	≤5	5.6-8.4	<4	≥60	≥0.2, ≤20; 0-20 in., ≥8 in. thick AND One or more horizons ≥0.06, <2; >6 in. thick with a top depth >0
4A	≥20	≥4.75	≤5	4.5-5.5	<4	≥60	
4K	≥20	≥4.75	>5, ≤15	6.5-8.4	<4	≥60	
4C	≥20	≥3.75	≤5	5.6-7.8	<4	≥60	≥0.2, ≤20; surface horizon to 8 in. and ≥0.06, ≤2; all horizons with top depth >0 OR Min. low K_{sat} ≥0.06 and ≤0.2,; Max. high K_{sat} ≤2.0; 0-60 in. (or first restrictive layer)
4CA	≥20	≥3.75	≤5	4.5-5.5	<4	≥60	
4CK	≥20	≥3.75	>5, ≤15	6.5-8.4	<4	≥60	
4CC	≥20	≥3.75	≤5	5.6-7.8	<4	≥60	≥0.2, ≤20; surface horizon to 8 in. and <0.06; all horizons w/ top depth >0 OR ≤0.06; 0-60 in. (or first restrictive layer)

Adapted Species – Group 4

COMMON NAME	20 YR. TREE/SHRUB HEIGHT (feet)	CONSERVATION TREE/SHRUB SUITABILITY GROUP (CTSG)
SHRUBS:		
Almond, Russian	5	4, 4K, 4C, 4CK, 4CC
Buffaloberry, Silver	10	4, 4K, 4C, 4CK, 4CC
Caragana	12	4, 4K, 4C, 4CK, 4CC
Cherry, Nanking	7	4, 4K, 4C, 4CK
Chokecherry, Common	10	4, 4K, 4C, 4CK
Currant, Golden	6	4, 4K, 4C, 4CK, 4CC
Honeysuckle, Blueleaf	10	4, 4K, 4C, 4CK
Lilac, Common	6	4, 4K, 4C, 4CK, 4CC
Lilac, Late	7	4, 4K, 4C, 4CK, 4CC
Plum, American	10	4, 4K, 4C, 4CK
Potentilla	3	4, 4K, 4C, 4CK, 4CC
Rose, Woods	4	4, 4K, 4C, 4CK
Sea-buckthorn	7	4, 4K, 4C, 4CK
Serviceberry, Saskatoon	8	4, 4K, 4C, 4CK
Silverberry	6	4, 4K, 4C, 4CK
Sumac, Skunkbush	8	4, 4K, 4C, 4CK, 4CC
EVERGREENS:		
Fir, Douglas	15	4, 4A, 4K, 4C, 4CK
Juniper, Rocky Mountain	12	4, 4A, 4K, 4C, 4CK, 4CC
Pine, Limber	16	4, 4A, 4K, 4C, 4CK, 4CC
Pine, Ponderosa	17	4, 4A, 4K, 4C, 4CK
Pine, Scotch	17	4, 4A, 4K, 4C, 4CK
Redcedar, Eastern	10	4, 4A, 4K, 4C, 4CK, 4CC
Spruce, Black Hills	15	4, 4A, 4K, 4C, 4CK
Spruce, Colorado Blue	15	4, 4A, 4K, 4C, 4CK
DECIDUOUS:		
Ash, Green	18	4, 4K, 4C, 4CK, 4CC
Cherry, Black	15	4, 4K, 4C, 4CK
Crabapple, Manchurian	15	4, 4K, 4C, 4CK
Crabapple, Siberian	15	4, 4K, 4C, 4CK
Elm, Siberian	25	4, 4K, 4C, 4CK, 4CC
Hackberry, Common	13	4, 4K, 4C, 4CK
Hawthorn, Arnold	9	4, 4K, 4C, 4CK
Honeylocust	15	4, 4K
Maple, Amur	10	4, 4K
Oak, Bur	16	4, 4K, 4C, 4CK
Olive, Russian	17	4, 4K, 4C, 4CK, 4CC

CONSERVATION TREE/SHRUB SUITABILITY GROUPS (CTSG)

GROUP 5 — Low/Moderate Available Water Capacity (AWC)

Description

Soils in this group are deep, well drained soils, with loamy and clayey textures, and low to moderate 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.

Subgroups

GROUP	SOIL DEPTH (in.)	AVAILABLE WATER CAPACITY (in.)	$CaCO_3$ EQUIVALENT (%, 0-12 in.)	pH (0-12 in.)	ELEC. COND. (mmhos, 0-12 in.)	DEPTH TO GROWING SEASON WATER TABLE (in.)	SATURATED HYDRAULIC CONDUCTIVITY (in. hr^{-1}) (SEE NOTES)
5	≥40	3.75-7.5	≤5	5.6-8.4	<4	≥60 AND Frequent, occasional, or no flooding <2 months during growing season with a duration of brief, long, or very long	≥0.2, ≤20; 0-60 in. (or first restrictive layer) and surface horizon texture is not sandy AND bottom horizon is not sandy/gravelly
5A	≥40	3.75-7.5	≤5	4.5-5.5	<4		
5K	≥40	3.75-7.5	>5, ≤15	6.5-8.4	<4		
5KK	≥40	3.75-7.5	>15, ≤40	6.5-8.4	<4		

Adapted Species – Group 5

COMMON NAME	20 YR. TREE/SHRUB HEIGHT (feet)	CONSERVATION TREE/SHRUB SUITABILITY GROUP (CTSG)
SHRUBS:		
Almond, Russian	5	5, 5K
Buffaloberry, Silver	10	5, 5K, 5KK
Caragana	12	5, 5K, 5KK
Cherry, Nanking	7	5, 5K
Chokecherry, Common	10	5, 5K, 5KK
Cotoneaster, Centennial	9	5, 5K
Cotoneaster, Peking	7	5, 5K
Currant, Golden	6	5, 5K, 5KK
Honeysuckle, Blueleaf	10	5, 5K
Lilac, Common	6	5, 5K, 5KK
Lilac, Late	7	5, 5K, 5KK
Plum, American	10	5, 5K
Potentilla	3	5, 5K, 5KK
Rose, Woods	4	5, 5K
Sandcherry, Western	4	5, 5K
Sea-buckthorn	7	5, 5K, 5KK
Serviceberry, Saskatoon	8	5, 5K
Silverberry	6	5, 5K, 5KK
Sumac, Skunkbush	8	5, 5K, 5KK
EVERGREENS:		
Fir, Douglas	15	5, 5K, 5KK, 5A
Juniper, Rocky Mountain	12	5, 5K, 5KK, 5A
Pine, Limber	16	5, 5K, 5KK, 5A
Pine, Ponderosa	17	5, 5K, 5KK, 5A
Pine, Scotch	17	5, 5K, 5A
Redcedar, Eastern	10	5, 5K, 5KK, 5A
Spruce, Black Hills	15	5, 5K, 5A
Spruce, Colorado Blue	15	5, 5K, 5A
DECIDUOUS:		
Ash, Green	18	5, 5K, 5KK
Cherry, Black	15	5, 5K
Crabapple, Manchurian	15	5, 5K
Crabapple, Siberian	15	5, 5K
Elm, Siberian	25	5, 5K, 5KK
Hackberry, Common	13	5, 5K
Hawthorn, Arnold	9	5, 5K
Honeylocust	15	5, 5K
Maple, Amur	10	5, 5K
Oak, Bur	16	5, 5K
Olive, Russian	17	5, 5K, 5KK
Poplar, White	25	5, 5K

CONSERVATION TREE/SHRUB SUITABILITY GROUPS (CTSG)

GROUP 6 — Moderately Deep Soils

Description

Soils in this group are well-drained, mostly loamy textures, and moderately deep over sand, gravel, bedrock, and other layers than can severely restrict root growth. They have low or moderate available water capacity.

Limitations

Droughtiness 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. Supplemental watering may be needed for establishment.

Subgroups

GROUP	SOIL DEPTH (in.)	AVAILABLE WATER CAPACITY (in.)	$CaCO_3$ EQUIVALENT (%, 0-12 in.)	pH (0-12 in.)	ELEC. COND. (mmhos, 0-12 in.)	DEPTH TO GROWING SEASON WATER TABLE (in.)	SATURATED HYDRAULIC CONDUCTIVITY (in. hr^{-1}) (SEE NOTES)
6	≥20	2.0-3.75	≤5	5.6-8.4	<4	≥60	≥0.2, ≤20; 0-20 in. AND bottom horizon is sandy/gravelly or ≥ 20 OR there is a root restrictive layer between 20-60 in.
6A	≥20	2.0-3.75	≤5	4.5-5.5	<4	≥60	
6K	≥20	2.0-3.75	>5, ≤15	6.5-8.4	<4	≥60	
6KK	≥20	2.0-3.75	>15, ≤40	6.5-8.4	<4	≥60	
6D	20-40	≥3.75	≤5	5.6-7.8	<4	≥60	≥0.2, ≤6; 0-20 in. AND there is a root restrictive layer between 20-60 in.
6DA	20-40	≥3.75	≤5	4.5-5.5	<4	≥60	
6DK	20-40	≥3.75	>5, ≤15	6.5-8.4	<4	≥60	
6G	≥20	≥3.75	≤5	5.6-8.4	<4	≥60	≥0.2, ≤20; 0-20 in. AND Bottom horizon is sandy/ gravelly or ≥20
6GA	≥20	≥3.75	≤5	4.5-5.5	<4	≥60	
6GK	≥20	≥3.75	>5, ≤15	6.5-8.4	<4	≥60	
6GKK	≥20	≥3.75	>15, ≤40	6.5-8.4	<4	≥60	

Adapted Species – Group 6

COMMON NAME	20 YR. TREE/SHRUB HEIGHT (feet)	CONSERVATION TREE/SHRUB SUITABILITY GROUP (CTSG)
SHRUBS:		
Buffaloberry, Silver	10	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK
Caragana	12	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK
Chokecherry, Common	10	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK
Currant, Golden	6	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK
Honeysuckle, Blueleaf	10	6, 6K, 6D, 6DK, 6G, 6GK
Lilac, Common	6	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK
Potentilla	3	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK
Rose, Woods	4	6, 6K, 6D, 6DK, 6G, 6GK
Sandcherry, Western	4	6, 6K, 6D, 6DK, 6G, 6GK
Sea-buckthorn	7	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK
Serviceberry, Saskatoon	8	6G, 6GK
Silverberry	6	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK
Sumac, Skunkbush	8	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK
EVERGREENS:		
Juniper, Rocky Mountain	12	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK, 6A, 6DA, 6GA
Pine, Limber	16	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK, 6A, 6DA, 6GA
Pine, Ponderosa	17	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK, 6A, 6DA, 6GA
Redcedar, Eastern	10	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK, 6A, 6DA, 6GA
DECIDUOUS:		
Ash, Green	18	6G, 6GK, 6GKK
Crabapple, Manchurian	15	6, 6K, 6D, 6DK, 6G, 6GK
Crabapple, Siberian	15	6, 6K, 6D, 6DK, 6G, 6GK
Elm, Siberian	25	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK
Olive, Russian	17	6, 6K, 6KK, 6D, 6DK, 6G, 6GK, 6GKK

CONSERVATION TREE/SHRUB SUITABILITY GROUPS (CTSG)

GROUP 7 — Droughty Soils

Description

Soils in this group are deep, excessively to moderately well drained, sandy in texture, typically have low to very low available water capacity, and do not normally have 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.

Subgroups

GROUP	SOIL DEPTH (in.)	AVAILABLE WATER CAPACITY (in.)	$CaCO_3$ EQUIVALENT (%, 0-12 in.)	pH (0-12 in.)	ELEC. COND. (mmhos, 0-12 in.)	DEPTH TO GROWING SEASON WATER TABLE (in.)	SATURATED HYDRAULIC CONDUCTIVITY (in. hr^{-1}) (SEE NOTES)
7	≥40	≥2.0	≤5	5.6-7.8	<4	≥60	≥6; 0-60 in. (or first restrictive layer) AND all horizons 0-60 in. have sandy texture
7A	≥40	≥2.0	≤5	4.5-5.5	<4	≥60	

Adapted Species – Group 7

COMMON NAME	20 YR. TREE/SHRUB HEIGHT (feet)	CONSERVATION TREE/SHRUB SUITABILITY GROUP (CTSG)
SHRUBS:		
Buffaloberry, Silver	10	7
Caragana	12	7
Lilac, Common	6	7
Potentilla	3	7
Sandcherry, Western	4	7
Sumac, Skunkbush	8	7
EVERGREENS:		
Juniper, Rocky Mountain	12	7, 7A
Pine, Limber	16	7, 7A
Pine, Ponderosa	17	7, 7A
Redcedar, Eastern	10	7, 7A
DECIDUOUS:		
Elm, Siberian	25	7
Olive, Russian	17	7

CONSERVATION TREE/SHRUB SUITABILITY GROUPS (CTSG)

GROUP 8 — Limy at Surface

Description

Soils in this group are calcareous at or near the surface. They do not receive beneficial moisture from run-in, flooding, or seasonal high water tables.

Limitations

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

Subgroups

GROUP	SOIL DEPTH (in.)	AVAILABLE WATER CAPACITY (in.)	$CaCO_3$ EQUIVALENT (%, 0-12 in.)	pH (0-12 in.)	ELEC. COND. (mmhos, 0-12 in.)	DEPTH TO GROWING SEASON WATER TABLE (in.)	SATURATED HYDRAULIC CONDUCTIVITY (in. hr^{-1}) (SEE NOTES)
8	≥40	≥7.5	>5, ≤15	6.5-8.4	<4	≥60	≥0.2, ≤20; 0-60 in. (or first restrictive layer)
8K	≥40	≥7.5	>15, ≤40	6.5-8.4	<4	≥60	

Adapted Species – Group 8

COMMON NAME	20 YR. TREE/SHRUB HEIGHT (feet)	CONSERVATION TREE/SHRUB SUITABILITY GROUP (CTSG)
SHRUBS:		
Buffaloberry, Silver	10	8, 8K
Caragana	12	8, 8K
Currant, Golden	6	8, 8K
Honeysuckle, Blueleaf	10	8
Lilac, Common	6	8, 8K
Potentilla	3	8, 8K
Sea-buckthorn	7	8, 8K
Sumac, Skunkbush	8	8, 8K
EVERGREENS:		
Juniper, Rocky Mountain	12	8, 8K
Pine, Limber	16	8, 8K
Pine, Ponderosa	17	8, 8K
Redcedar, Eastern	10	8, 8K
DECIDUOUS:		
Elm, Siberian	25	8, 8K
Olive, Russian	17	8, 8K

CONSERVATION TREE/SHRUB SUITABILITY GROUPS (CTSG)

GROUP 9 — Saline/Sodic Soils

Description

Soils in this group are affected by salinity and/or sodicity.

Limitations

Concentrations of salt will severely affect the establishment, vigor, and growth of trees and shrubs on these soils.

Subgroups

GROUP	SOIL DEPTH (in.)	AVAILABLE WATER CAPACITY (in.)	SODIUM ADSORPTION RATIO	pH (0-12 in.)	ELEC. COND. (mmhos, 0-12 in.)	DEPTH TO GROWING SEASON WATER TABLE (in.)	SATURATED HYDRAULIC CONDUCTIVITY (in. hr^{-1}) (SEE NOTES)
9C	≥20	≥3.75	--	--	4-16	≥60	≥0.2, ≤20; surface horizon to 8 in. and ≥0.06, ≤2; all horizons with top depth >0 OR ≥0.06, ≤2; 0-60 in. (or first restrictive layer)
9L	≥20	≥3.75	--	--	4-16	≥60	≥0.2, ≤6; 0-60 in. (or first restrictive layer) OR ≥0.06, ≤0.2; 8-20 in. (or first restrictive layer) OR ≥0.06, ≤0.2; 20-60 in. (or first restrictive layer)
9N	≥20	≥2.0	>13, <25 any layer	--	0-16	>60	--
9NW	≥20	≥2.0	>13, <25 any layer	--	0-16	≥18, ≤60	--
9W	≥20	≥2.0	--	--	4-16	≥18, ≤60	--

Adapted Species – Group 9

COMMON NAME	20 YR. TREE/SHRUB HEIGHT (feet)	CONSERVATION TREE/SHRUB SUITABILITY GROUP (CTSG)
SHRUBS:		
Buffaloberry, Silver	10	9C, 9L, 9W, 9N, 9NW
Caragana	12	9C, 9L, 9W, 9N, 9NW
Currant, Golden	6	9C, 9L, 9W
Sea-buckthorn	7	9C, 9L
Silverberry	6	9C, 9L
Sumac, Skunkbush	8	9C, 9L, 9W, 9N, 9NW
EVERGREENS:		
Juniper, Rocky Mountain	12	9C, 9L, 9W
Redcedar, Eastern	10	9C, 9L, 9W
DECIDUOUS:		
Elm, Siberian	25	9C, 9L, 9W, 9N, 9NW

CONSERVATION TREE/SHRUB SUITABILITY GROUPS (CTSG)

GROUP 10 — Unsuited

Description

Soils in this group have one or more characteristics such as soil depth, texture, drainage, available water capacity, slope, 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 on moderately steep to steep slopes (generally greater than 15 percent) and soils that are generally too wet, too shallow, or have other severely restrictive conditions fall into Group 10.

Subgroup

GROUP	SOIL DEPTH (in.)	AVAILABLE WATER CAPACITY (in.)	$CaCO_3$ EQUIVALENT (%, 0-12 in.)	pH (0-12 in.)	ELEC. COND. (mmhos, 0-12 in.)	DEPTH TO GROWING SEASON WATER TABLE (in.)	SATURATED HYDRAULIC CONDUCTIVITY (in. hr^{-1}) (SEE NOTES)
10	Place soil components in CTSG 10 if <u>any</u> of the following conditions exist: • Soil depth <20 in. • Available Water Capacity <2.0 in. • CaCO3 Equivalent >40%, 0-12 in. • pH <4.0, 0-12 in. • Elec. Cond. >16 mmhos, 0-12 in. • Depth to Growing Season Water Table <18 in. • Wet Soil Moisture ≥3 months During Growing Season • Sodium Adsorption Ratio ≥25 NOTE: The NASIS interpretations generator will place soil components in CTSG 10 if any of the above conditions Exist <u>or</u> if any of he following are true • No taxonomic temperature regime is recorded • The component kind is “miscellaneous area” • There is no data in the horizon table						

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