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Conservation Tree/Shrub Groups (CTSGs)

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Each field office/DC shall list individual soils that are included in each CTSG for your service area. It is recommended that this task be accomplished using the on-line Soils Database.

Conservation Tree/Shrub Groups (CTSGs)

Introduction

A Conservation Tree/Shrub Group (CTSG) is a physiographic unit or area having similar climatic and edaphic or soils-related characteristics that control the selection and height growth of trees and shrubs. It consists mainly of two elements: 1) Major Land Resource Area, and 2) Soil Group.

1) The first part of a CTSG is the designated Major Land Resource Area or MLRA. This refines the list of woody plant species selection and adaptation to a specified geographic area with similarities in climate. MLRAs are defined in USDA Agricultural Handbook 296 (2006) re. <http://soils.usda.gov/survey/geography/mlra/index.html>. As needed, States will subdivide an MLRA where there are varying elevations (e.g., hardiness zones) and diverse ranges of average annual precipitation that influence species selection and performance.

2) The second part is the Soil Group. This part of the CTSG further refines the list of woody plants based on groupings of edaphic conditions. Rather than try to correlate plant data for each and every soil component, a component is evaluated against criteria and placed in a soil group. Woody plants are then correlated to a specific soil group within the identified MLRA (or subdivision thereof). The calculation of soil group uses criteria displayed in Exhibit 537-15. Local, custom criteria can be used to override the calculated soil group as well as recognize additional local soil groups if needed.

The correlation and display of adapted woody species, height performance, other attributes, and associated practices and measures using the CTSG system need to be clearly understood by clients. The performance of species is expressed as the expected height at a base age (usually 20 years in continental U.S. and Alaska and 10 years for tropical and subtropical areas). Other attributes may be correlated to each species such as longevity, wildlife value, and crown shape and spread. In addition to height performance and other attributes, the CTSG MLRA (or subdivision thereof) and soil group may be used to determine facilitating practices and measures that can enhance survival and growth of woody species for correlated soil components. For example, a soil component in Soil Group 7 (sandy) in an agricultural area in MLRA B7 will likely have blowing sand that will damage new seedlings in a zone of low precipitation. Permanent irrigation (e.g., Irrigation System - Microirrigation, 441) and moisture-conserving “weed barrier” (e.g., Mulching, 484) in combination with small physical barriers on the windward side of planted seedlings (e.g., straw bales or snow-fence) could offer mitigating actions to insure better survival and establishment.

States are responsible for developing CTSG interpretations for MLRAs that occur wholly within their state. For MLRAs that cross state boundaries, the individual state with the greatest extent of the MLRA is responsible for developing CTSG interpretations but must coordinate with adjacent states having the MLRA. States will use the national CTSG soil group criteria (NASIS calculation) or, if needed, a modified version done by individual MLRA (requires coordination of all states with the MLRA). All states must develop subdivisions of an MLRA, as needed, to accommodate cold hardiness zones, precipitation zones, or other plant-influencing landscape-level conditions. In so far as possible, these subdivisions should align with established Land

Resource Units. States make periodic reviews and updates to such displays so that information and data are current in section II of the eFOTG, Web Soil Survey, Soil Data Mart, and other documents as applicable. Although the CTSG designation is very helpful in conservation planning, it does not override the need for on-site evaluation for properly selecting trees and shrubs and estimating design heights and other planning requirements (190-V-NFM, Dec. 15, 2008).

All soil series mapped in the state have been placed with similar soils into one of the 22 CTSGs. Refer to Conservation Tree/Shrub Group Descriptions for a brief description of the characteristics of each soil group. Each tree or shrub species has certain climatic and physiographic limits. Within these parameters tree and shrubs may be well or poorly suited because of climate, site and soil characteristics. These 22 groups are derived from splitting out additional soil characteristics, such as calcareousness, dryness, soil texture, soil depth, water holding capacity, depth to water table, salinity, and pH. Individual species performance will vary under specified conditions of climate, physiography, and management. Factors such as weed competition, moisture conservation, spacing, and arrangement must also be considered.

A revised map of Nebraska Vegetation Zones is included for your reference. It may also be found in the Nebraska Field Office Technical Guide, Section I-Maps. Each county in Nebraska is included in one of four vegetative zones, based on precipitation ranges. Because vegetative zones are large, climatic differences within a zone should also be considered when recommending species. Some species adapted to the eastern end of a zone may not be as adequately adapted to the western end due to rainfall generally varying from “more” in the east to “less” in the west

This information provides guidance for selecting species best suited within each vegetative zone for each of the 22 groups of soils. It can also be used for predicting survival, height, growth, species attributes and effectiveness for the purpose of the planting. It can be used to select plants for windbreaks, riparian plantings, recreation and wildlife plantings, ornamental or environmental plantings, reforestation, and critical area plantings.

The expected 20-year tree or shrub height and height/spread at maturity is listed in individual tables by CTSG and vegetative zone. This information should be employed when determining: the spacing and placement of tree/shrub plantings, the area to be protected by the windbreak, the species components, the effectiveness of the planting purpose, and other planting design considerations.

Named varieties of plants cooperatively released through the NRCS/USDA Plant Materials Program have been included in the tables. These varieties have proven superior and should be used when they are available. Native plant species should receive higher preference when planning a tree or shrub planting than non-native species.

SOIL NAMES ALPHABETICALLY

Component Name	CTSG	phase
Ackmore	1	
Aksarben	4	
Albaton	2K	
Albaton variant	2K	
Albinas	6	
Alcester	3	
Alda	1S	
Alda	10	channeled, frequently flooded
Alice	5	
Alliance	5	
Almeria	10	
Altvan	6	
Angora	3	
Anselmo	5	
Anselmo	3	very fine sandy loam
Aowa	1	
Aowa	10	channeled, frequently flooded
Arvada	10	
Ascalon	5K	
Ashollow	8	
Ashollow	10	> 30 percent slopes
Badland	10	
Bahl	4CK	
Baltic	2K	
Bankard	10	
Bankard variant	10	
Barney	10	
Barney variant	10	
Bayard	5	
Bazile	5	
Beckton	9W	
Before	3	
Benfield	10	
Benkelman	1	
Betts	8	
Betts	10	> 30 percent slopes
Bigbend	10	
Bigwinder	1S	
Birdwood	10	
Blackloup	10	
Blackwood	3	
Blake	1	
Blanche	6	
Blencoe	2	
Blendon	5	
Blendon variant	5	
Blownout land	10	
Blueridge	10	
Blyburg	3	
Boel	1S	
Boel	10	channeled, occasionally flooded
Boelus	5	
Bolent	2	
Bolent	10	channeled, occasionally flooded

SOIL NAMES ALPHABETICALLY

Boone	10	
Boyd	10	
Bridget	3	
Bristow	10	
Broadwater	10	
Brocksburg	6	
Brownson	10	
Brunswick	7	
Buffington	4	
Bufton	4	
Burchard	3	
Busher	5	
Bushman	5K	
Butler	2	
Calamus	7	
Calamus	10	channeled, occasionally flooded
Calco	2	
Campus	6	
Canlon	10	
Canyon	10	
Carr	1	
Caruso	2	
Caruso variant	6	
Cass	5	
Cass	10	channeled, frequently flooded
Cass variant	5	
Chappell	6	
Chase	2	
Cheyenne	6	
Clamo	2	
Clarno	2	
Clawhammer	10	
Coleridge	1	
Colfer	7	
Colo	2	
Colo	10	channeled, frequently flooded
Coly	8	
Coly	10	> 30 percent slopes
Contrary	3	
Cooper	1	
Cortland	5	
Cozad	3	
Cozad	9L	saline-alkali
Cozad variant	3	
Craft	8	
Craft	10	channeled, frequently flooded
Craft	9L	
Creighton	3	
Crete	4	
Crete variant	9L	
Crofton	8	
Crofton	10	
Crowther	10	
Cullison	10	
Cutcomb	10	

SOIL NAMES ALPHABETICALLY

Dailey	7	
Dankworth	7	
Darr	6	
Deroin	3	
Detroit	4	
Dickinson	5	
Dix	10	
Doger	7	
Doughboy	8	
Dow	3	
Draknab	5	
Duda	10	
Dudley	9L	
Dunday	7	
Dunn	5	
Duroc	3	
Dwyer	7	
Eckley	10	
Edalgo	10	
Els	1S	
Els	1SK	calcareous
Elsmere	1S	
Elsmere	1SK	calcareous
Eltree	3	
Enning	10	
Epping	10	
Eudora	1	
Filbert	2	
Filley	5	
Fillmore	10	
Fillmore	2	drained
Fillmore variant	10	
Fishberry	10	
Fluvaquents	10	
Fluvaquents, loamy	10	
Fluvaquents, sandy	10	
Fluvaquents, silty	10	
Fonner	6	
Fonner variant	6	
Fontanelle	2	
Forney	2K	
Gannett	10	
Gannett variant	10	
Gates	3	
Gates	10	> 30 percent slopes
Gavins	10	
Gayville	9L	
Gayville variant	9L	
Geary	3	
Geary variant	3	
Gering	9L	
Gibbon	2	
Gibbon	9L	saline-alkali
Gibbon variant	2	
Gilliam	1	

SOIL NAMES ALPHABETICALLY

Glenberg	5K	
Glenberg	10	channeled, frequently flooded
Goshen	3	
Gosper	1	
Gosper	9L	saline-alkali
Gothenburg	10	
Grable	5K	
Grable variant	5K	
Graybert	3	
Grigston	3	
Gullied land	10	
Gus	10	
Gymer	4	
Hadar	5	
Haigler	9L	
Hall	3	
Harney	3	
Hastings	3	
Hastings variant	3	
Haverson	8	
Haxtun	5	
Haynie	8	
Haynie	10	channeled, occasionally flooded
Haynie variant	8	
Hedville	10	
Hemingford	5	
Hennings	5	
Hennings	7	loamy fine sands
Hersh	5	
Hersh	7	loamy fine sands
Hersh	10	> 30 percent slopes
Hisle	10	
Histosols	10	
Hobbs	1	
Hobbs	10	channeled, frequently flooded
Hoffland	10	
Holder	3	
Holder variant	3	
Holdrege	3	
Holdrege variant	3	
Holly Springs	10	
Holt	7	
Holt variant	7	
Hord	3	
Hord variant	3	
Humbarger	3	
Humbarger variant	3	
Ida	8	
Ida	10	> 30 percent slopes
Imlay	10	
Inavale	7	
Inavale	10	channeled, frequently flooded
Inglewood	7	
Inglewood	10	channeled, occasionally flooded
Interior	10	

SOIL NAMES ALPHABETICALLY

lpage	7	
Janise	9W	
Jankosh	9W	
Jansen	6	
Jansen variant	6	
Janude	3	
Jayem	5	
Jayem	7	loamy fine sands
Johnstown	3	
Josburg	3	
Judson	3	
Kadoka	6D	
Kanorado	4CK	
Keith	3	
Keith variant	9L	
Kenesaw	3	
Kennebec	1	
Kennebec	10	channeled, frequently flooded
Kenridge	1	
Keota	10	
Keota	8	
Keya	3	
Kezan	2	
Kezan	10	channeled, frequently flooded
Kipson	10	
Kipson variant	10	
Kuma	3	
Kyle	4C	
Labu	4C	
Labu	10	> 30 percent slopes
Laird	10	
Lamo	1K	
Lamo variant	1K	
Lancaster	6D	
Lancaster variant	6D	
Las	1SK	
Las Animas	1SK	
Las Animas	10	channeled, frequently flooded
Lawet	1K	
Lawet	9L	
Lawet variant	3	
Leisy	3	
Lemoyne	5	
Leshara	1	
Lewellen	9W	
Lex	1SK	
Lex	9W	saline-alkali
Lex variant	1SK	
Lexsworth	9W	
Libory	1	
Lisco	10	
Lockton	1S	
Lodgepole	10	
Lohmiller	10	channeled, frequently flooded
Lohmiller	4K	

SOIL NAMES ALPHABETICALLY

Longford	4	
Longpine	10	
Loretto	3	
Lossing	1K	
Loup	2	
Loup	10	frequently ponded
Lute	9W	
Luton	2K	
Lynch	10	
Mace	6D	
Malcolm	3	
Malmo	4C	
Manter	5	
Manvel	8	
Mariaville	10	
Marlake	10	
Marshall	3	
Maskell	3	
Massie	10	
Mayberry	4C	
McCash	3	
McConaughy	3	
McCook	8	
McCook	10	channeled, occasionally flooded
McCook variant	8	
McCuligan	2K	
McGrew	1K	
McGrew	9W	saline-alkali
McKelvie	7	
McKelvie	10	
McPaul	1	
Meadin	10	
Meckling	1K	
Medihemists	10	
Melia	3	
Merrick	3	
Minatare	10	
Minnequa	9L	
Minnequa	10	saline-alkali
Mitchell	8	
Mitchell variant	8	
Modale	1	
Monona	3	
Monona	10	> 30 percent slopes
Monona variant	3	
Moody	3	
Morrill	3	
Morrill variant	3	
Moville	1	
Muir	3	
Mullen	5	
Munjor	5K	
Munjor	10	channeled, frequently flooded
Munjor variant	5K	
Muscotah	2	

SOIL NAMES ALPHABETICALLY

Napa	10	
Napier	3	
Nenzel	7	
Nimbro	8	
Niobrara	10	
Nishna	2K	
Nodaway	1	
Nodaway	10	channeled, frequently flooded
Nora	3	
Nora variant	3	
Norrest	4	
Norway	10	
Norwest	1K	
Novina	1	
Nuckolls	3	
Nuckolls variant	3	
Obert	10	
Obert	2K	
Oglala	3	
Olbut	9W	
Olmitz	3	
Olney	5K	
Omadi	1	
Onawa	1	
Onawet	2K	
O'Neill	6	
Onita	4	
Ord	1S	
Ord variant	1S	
Orella	10	
Orpha	7	
Orpha	10	> 30 percent slopes
Ortello	5	
Ortello	7	loamy fine sands
Orwet	2	
Otero	8	
Otero variant	8	
Otoe	4C	
Overlake	5	
Ovina	1	
Owego	2K	
Padonia	4C	
Pahuk	7	
Paka	10	> 30 percent slopes
Paka	3	
Pathfinder	9L	
Pawnee	4C	
Pawnee variant	4C	
Percival	1K	
Phiferson	6DK	
Phiferson	10	> 30 percent slopes
Pierre	4C	
Pivot	7	
Pivot	10	> 17 percent slopes
Platte	1S	

SOIL NAMES ALPHABETICALLY

Platte	10	channeled, frequently flooded
Pohocco	3	
Pohocco	10	> 30 percent slopes
Ponca	3	
Ponderosa	5	
Ponderosa	3	very fine sandy loam
Ponderosa	10	> 30 percent slopes
Promise	4C	
Ralton	6K	
Redstoe	10	
Ree	3	
Reliance	4K	
Richfield	3	
Ringgold	5	
Riverwash	10	
Rock outcrop	10	
Ronson	10	
Rosebud	6D	
Rosebud	10	> 17 percent slopes
Roxbury	1	
Rusco	2	
Rusco variant	2	
Rushcreek	6K	
Salix	1K	
Salmo	9W	
Salmo	10	channeled, frequently flooded
Saltillo	10	
Saltine	10	
Samsil	10	
Sanborn	10	
Sandose	5	
Sansarc	10	
Sarben	10	> 30 percent slopes
Sarben	5	
Sarben	7	loamy fine sands
Sardak	7	
Sarpy	7	
Satanta	3	
Satanta	6	gravelly substratum
Savo	4	
Schamber	10	
Scott	10	
Scott variant	10	
Scoville	5	
Scroll	6K	
Selia	10	
Shale outcrop	10	
Sharpsburg variant	10	
Shelby	3	
Shelby	10	> 30 percent slopes
Shell	1	
Shell variant	3	
Shingle	8	
Sidney	5K	
Silver Creek	9W	

SOIL NAMES ALPHABETICALLY

Simeon	7	
Skilak	9L	
Skilak	10	> 17 percent slopes
Slickspots	10	
Smithland	1	
Sogn	10	
Solomon	2	
Steinauer	8	
Steinauer	10	> 30 percent slopes
Sulco	8	
Sulco	10	> 30 percent slopes
Sully	8	
Talmo	10	
Tassel	10	
Thirtynine	3	
Thurman	7	
Ticonic	5	
Tieville	2	
Tomek	3	
Trent	3	
Tripp	3	
Tryon	2	
Tryon	10	frequently ponded
Tuthill	5	
Udarents	10	
Udorthents	10	
Uly	3	
Uly	10	> 30 percent slopes
Uly variant	3	
Ulysses	3	
Urban land	10	
Ustipsamments	10	
Ustorthents	10	
Valent	7	
Valent	10	> 30 percent slopes
Valentine	7	
Valentine	10	> 30 percent slopes
Verdel	4C	
Verdigre	4	
Vetal	5	
Wabash	2	
Wakeen	6D	
Wakeen	10	> 17 percent slopes
Wakeen variant	6D	
Wann	1S	
Wann	10	channeled, occasionally flooded
Wann	9L	saline-alkali
Wann variant	1S	
Wann variant	9L	saline-alkali
Wathena	1S	
Waubonsie	1	
Wewela	7	
Whitelake	10	
Wildhorse	10	
Wood River	9L	saline-alkali

SOIL NAMES ALPHABETICALLY

Wood River	10	
Woodbury	2	
Woodly	3	
Wymore	4C	
Yockey	10	
Yockey	9W	saline-alkali
Yutan	3	
Zoe	9W	
Zook	2	

SOIL NAMES BY GROUP NUMBER

Component Name	CTSG	Phase
Ackmore	1	
Aowa	1	
Benkelman	1	
Blake	1	
Carr	1	
Coleridge	1	
Cooper	1	
Eudora	1	
Gilliam	1	
Gosper	1	
Hobbs	1	
Kennebec	1	
Kenridge	1	
Leshara	1	
Libory	1	
McPaul	1	
Modale	1	
Moville	1	
Nodaway	1	
Novina	1	
Omadi	1	
Onawa	1	
Ovina	1	
Roxbury	1	
Shell	1	
Smithland	1	
Waubonsie	1	
Blencoe	2	
Bolent	2	
Butler	2	
Calco	2	
Caruso	2	
Chase	2	
Clamo	2	
Clarno	2	
Colo	2	
Filbert	2	
Fillmore	2	drained
Fontanelle	2	
Gibbon	2	
Gibbon variant	2	
Kezan	2	
Loup	2	
Muscotah	2	
Orwet	2	
Rusco	2	
Rusco variant	2	
Solomon	2	
Tieville	2	
Tryon	2	
Wabash	2	
Woodbury	2	
Zook	2	
Alcester	3	

SOIL NAMES BY GROUP NUMBER

Angora	3	
Anselmo	3	very fine sandy loam
Belfore	3	
Blackwood	3	
Blyburg	3	
Bridget	3	
Burchard	3	
Contrary	3	
Cozad	3	
Cozad variant	3	
Creighton	3	
Deroin	3	
Dow	3	
Duroc	3	
Eltree	3	
Gates	3	
Geary	3	
Geary variant	3	
Goshen	3	
Graybert	3	
Grigston	3	
Hall	3	
Harney	3	
Hastings	3	
Hastings variant	3	
Holder	3	
Holder variant	3	
Holdrege	3	
Holdrege variant	3	
Hord	3	
Hord variant	3	
Humbarger	3	
Humbarger variant	3	
Janude	3	
Johnstown	3	
Josburg	3	
Judson	3	
Keith	3	
Kenesaw	3	
Keya	3	
Kuma	3	
Lawet variant	3	
Leisy	3	
Loretto	3	
Malcolm	3	
Marshall	3	
Maskell	3	
McCash	3	
McConaughy	3	
Melia	3	
Merrick	3	
Monona	3	
Monona variant	3	
Moody	3	
Morrill	3	

SOIL NAMES BY GROUP NUMBER

Morrill variant	3	
Muir	3	
Napier	3	
Nora	3	
Nora variant	3	
Nuckolls	3	
Nuckolls variant	3	
Oglala	3	
Olmitz	3	
Paka	3	
Pohocco	3	
Ponca	3	
Ponderosa	3	very fine sandy loam
Ree	3	
Richfield	3	
Satanta	3	
Shelby	3	
Shell variant	3	
Thirtynine	3	
Tomek	3	
Trent	3	
Tripp	3	
Uly	3	
Uly variant	3	
Ulysses	3	
Woodly	3	
Yutan	3	
Aksarben	4	
Buffington	4	
Buften	4	
Crete	4	
Detroit	4	
Gymer	4	
Longford	4	
Norrest	4	
Onita	4	
Savo	4	
Verdigre	4	
Alice	5	
Alliance	5	
Anselmo	5	
Bayard	5	
Bazile	5	
Blendon	5	
Blendon variant	5	
Boelus	5	
Busher	5	
Cass	5	
Cass variant	5	
Cortland	5	
Dickinson	5	
Draknab	5	
Dunn	5	
Filley	5	
Hadar	5	

SOIL NAMES BY GROUP NUMBER

Haxtun	5	
Hemingford	5	
Hennings	5	
Hersh	5	
Jayem	5	
Lemoynes	5	
Manter	5	
Mullen	5	
Ortello	5	
Overlake	5	
Ponderosa	5	
Ringgold	5	
Sandose	5	
Sarben	5	
Scoville	5	
Ticonic	5	
Tuthill	5	
Vetal	5	
Albinas	6	
Altvan	6	
Blanche	6	
Brocksburg	6	
Campus	6	
Caruso variant	6	
Chappell	6	
Cheyenne	6	
Darr	6	
Fonner	6	
Fonner variant	6	
Jansen	6	
Jansen variant	6	
O'Neill	6	
Satanta	6	gravelly substratum
Brunswick	7	
Calamus	7	
Colfer	7	
Dailey	7	
Dankworth	7	
Doger	7	
Dunday	7	
Dwyer	7	
Hennings	7	loamy fine sands
Hersh	7	loamy fine sands
Holt	7	
Holt variant	7	
Inavale	7	
Inglewood	7	
Ipage	7	
Jayem	7	loamy fine sands
McKelvie	7	
Nenzel	7	
Orpha	7	
Ortello	7	loamy fine sands
Pahuk	7	
Pivot	7	

SOIL NAMES BY GROUP NUMBER

Sarben	7	loamy fine sands
Sardak	7	
Sarpy	7	
Simeon	7	
Thurman	7	
Valent	7	
Valentine	7	
Wewela	7	
Ashollow	8	
Betts	8	
Coly	8	
Craft	8	
Crofton	8	
Doughboy	8	
Haverson	8	
Haynie	8	
Haynie variant	8	
Ida	8	
Keota	8	
Manvel	8	
McCook	8	
McCook variant	8	
Mitchell	8	
Mitchell variant	8	
Nimbro	8	
Otero	8	
Otero variant	8	
Shingle	8	
Steinauer	8	
Sulco	8	
Sully	8	
Alda	10	channeled, frequently flooded
Almeria	10	
Aowa	10	channeled, frequently flooded
Arvada	10	
Ashollow	10	> 30 percent slopes
Badland	10	
Bankard	10	
Bankard variant	10	
Barney	10	
Barney variant	10	
Benfield	10	
Betts	10	> 30 percent slopes
Bigbend	10	
Birdwood	10	
Blackloup	10	
Blownout land	10	
Blueridge	10	
Boel	10	channeled, occasionally flooded
Bolent	10	channeled, occasionally flooded
Boone	10	
Boyd	10	
Bristow	10	
Broadwater	10	
Brownson	10	

SOIL NAMES BY GROUP NUMBER

Calamus	10	channeled, occasionally flooded
Canlon	10	
Canyon	10	
Cass	10	channeled, frequently flooded
Clawhammer	10	
Colo	10	channeled, frequently flooded
Coly	10	> 30 percent slopes
Craft	10	channeled, frequently flooded
Crofton	10	
Crowther	10	
Cullison	10	
Cutcomb	10	
Dix	10	
Duda	10	
Eckley	10	
Edalgo	10	
Enning	10	
Epping	10	
Fillmore	10	
Fillmore variant	10	
Fishberry	10	
Fluvaquents	10	
Fluvaquents, loamy	10	
Fluvaquents, sandy	10	
Fluvaquents, silty	10	
Gannett	10	
Gannett variant	10	
Gates	10	> 30 percent slopes
Gavins	10	
Glenberg	10	channeled, frequently flooded
Gothenburg	10	
Gullied land	10	
Gus	10	
Haynie	10	channeled, occasionally flooded
Hedville	10	
Hersh	10	> 30 percent slopes
Hisle	10	
Histosols	10	
Hobbs	10	channeled, frequently flooded
Hoffland	10	
Holly Springs	10	
Ida	10	> 30 percent slopes
Imlay	10	
Inavale	10	channeled, frequently flooded
Inglewood	10	channeled, occasionally flooded
Interior	10	
Kennebec	10	channeled, frequently flooded
Keota	10	
Kezan	10	channeled, frequently flooded
Kipson	10	
Kipson variant	10	
Labu	10	> 30 percent slopes
Laird	10	
Las Animas	10	channeled, frequently flooded
Lisco	10	

SOIL NAMES BY GROUP NUMBER

Lodgepole	10	
Lohmiller	10	channeled, frequently flooded
Longpine	10	
Loup	10	frequently ponded
Lynch	10	
Mariaville	10	
Marlake	10	
Massie	10	
McCook	10	channeled, occasionally flooded
McKelvie	10	
Meadin	10	
Medihemists	10	
Minatare	10	
Minnequa	10	saline-alkali
Monona	10	> 30 percent slopes
Munjor	10	channeled, frequently flooded
Napa	10	
Niobrara	10	
Nodaway	10	channeled, frequently flooded
Norway	10	
Obert	10	
Orella	10	
Orpha	10	> 30 percent slopes
Paka	10	> 30 percent slopes
Phiferson	10	> 30 percent slopes
Pivot	10	> 17 percent slopes
Platte	10	channeled, frequently flooded
Pohocco	10	> 30 percent slopes
Ponderosa	10	> 30 percent slopes
Redstoe	10	
Riverwash	10	
Rock outcrop	10	
Ronson	10	
Rosebud	10	> 17 percent slopes
Salmo	10	channeled, frequently flooded
Saltillo	10	
Saltine	10	
Samsil	10	
Sanborn	10	
Sansarc	10	
Sarben	10	> 30 percent slopes
Schamber	10	
Scott	10	
Scott variant	10	
Selia	10	
Shale outcrop	10	
Sharpsburg variant	10	
Shelby	10	> 30 percent slopes
Skilak	10	> 17 percent slopes
Slickspots	10	
Sogn	10	
Steinauer	10	> 30 percent slopes
Sulco	10	> 30 percent slopes
Talmo	10	
Tassel	10	

SOIL NAMES BY GROUP NUMBER

Tryon	10	frequently ponded
Udarents	10	
Udorthents	10	
Uly	10	> 30 percent slopes
Urban land	10	
Ustipsamments	10	
Ustorthents	10	
Valent	10	> 30 percent slopes
Valentine	10	> 30 percent slopes
Wakeen	10	> 17 percent slopes
Wann	10	channeled, occasionally flooded
Whitelake	10	
Wildhorse	10	
Wood River	10	
Yockey	10	
Lamo	1K	
Lamo variant	1K	
Lawet	1K	
Lossing	1K	
McGrew	1K	
Meckling	1K	
Norwest	1K	
Percival	1K	
Salix	1K	
Alda	1S	
Bigwinder	1S	
Boel	1S	
Els	1S	
Elsmere	1S	
Lockton	1S	
Ord	1S	
Ord variant	1S	
Platte	1S	
Wann	1S	
Wann variant	1S	
Wathena	1S	
Els	1SK	calcareous
Elsmere	1SK	calcareous
Las	1SK	
Las Animas	1SK	
Lex	1SK	
Lex variant	1SK	
Albaton	2K	
Albaton variant	2K	
Baltic	2K	
Forney	2K	
Luton	2K	
McCuligan	2K	
Nishna	2K	
Obert	2K	
Onawet	2K	
Owego	2K	
Kyle	4C	
Labu	4C	
Malmo	4C	

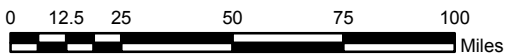
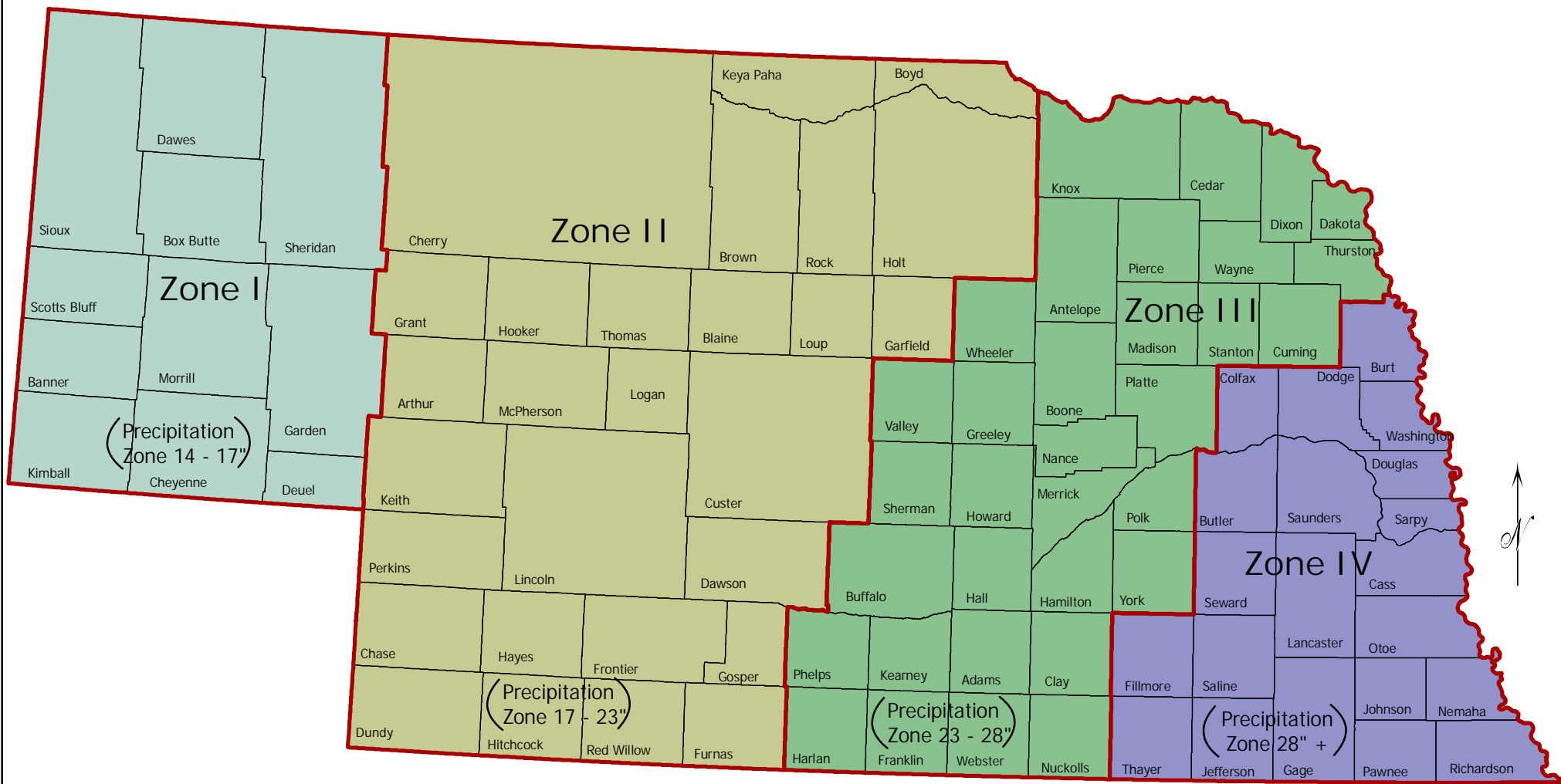
SOIL NAMES BY GROUP NUMBER

Mayberry	4C	
Otoe	4C	
Padonia	4C	
Pawnee	4C	
Pawnee variant	4C	
Pierre	4C	
Promise	4C	
Verdel	4C	
Wymore	4C	
Bahl	4CK	
Kanorado	4CK	
Lohmiller	4K	
Reliance	4K	
Ascalon	5K	
Bushman	5K	
Glenberg	5K	
Grable	5K	
Grable variant	5K	
Munjor	5K	
Munjor variant	5K	
Olney	5K	
Sidney	5K	
Kadoka	6D	
Lancaster	6D	
Lancaster variant	6D	
Mace	6D	
Rosebud	6D	
Wakeen	6D	
Wakeen variant	6D	
Phiferson	6DK	
Ralton	6K	
Rushcreek	6K	
Scroll	6K	
Cozad	9L	saline-alkali
Craft	9L	
Crete variant	9L	
Dudley	9L	
Gayville	9L	
Gayville variant	9L	
Gering	9L	
Gibbon	9L	saline-alkali
Gosper	9L	saline-alkali
Haigler	9L	
Keith variant	9L	
Lawet	9L	
Minnequa	9L	
Pathfinder	9L	
Skilak	9L	
Wann	9L	saline-alkali
Wann variant	9L	saline-alkali
Wood River	9L	saline-alkali
Beckton	9W	
Janise	9W	
Jankosh	9W	
Lewellen	9W	

SOIL NAMES BY GROUP NUMBER

Lex	9W	saline-alkali
Lexsworth	9W	
Lute	9W	
McGrew	9W	saline-alkali
Olbut	9W	
Salmo	9W	
Silver Creek	9W	
Yockey	9W	saline-alkali
Zoe	9W	

NEBRASKA VEGETATIVE ZONES



Conservation Tree/Shrub Groups (CTSGs)

Descriptions

Group 1 (Wet Favorable)

Soil depth to a restrictive layer is at least 40 inches (100 cm). The depth to a water table during the growing season is at least 1.5 feet (45 cm) but less than 4 feet (120 cm). If the soil is frequently or occasionally flooded for 2 or more months during the growing season, with duration of brief, long, or very long, then the depth to a water table during the growing season may exceed 4 feet. The available water capacity is greater than 9 inches (22.5 centimeters). In the upper 12 inches (30 cm) of the soil profile free carbonates do not exceed a concentration of 5 percent calcium carbonate equivalent, the range of pH is between 5.6 and 8.4, and electrical conductivity is 4 mmhos/cm or less.

Subgroup 1K (Wet Favorable-Calcareous)

Soil criteria is the same as Group 1 except:

_ In the upper 12 inches (30 cm) of the soil profile free carbonates range between 5 and 15 percent calcium carbonate equivalent and the range of pH is between 6.5 and 8.4.

Subgroup 1S (Wet Favorable-Droughty)

Soil criteria is the same as Group 1 except:

_ The available water capacity is between 6 and 9 inches (15 and 22.5 cm).

Subgroup 1SK (Wet Favorable-Droughty-Calcareous)

Soil criteria is the same as Group 1 except:

_ The available water capacity is between 6 and 9 inches (15 and 22.5 cm)

_ In the upper 12 inches (30 cm) of the soil profile free carbonates range between 5 and 15 percent calcium carbonate equivalent and the range of pH is between 6.5 and 8.4.

Group 2 (Wet)

Soil depth to a restrictive layer is at least 40 inches (100 cm). The depth to a water table during the growing season is at least 0.5 feet (15 cm) but less than 1.5 feet (45 cm). The available water capacity is greater than 3 inches (8 cm).

In the upper 12 inches (30 cm) of the soil profile free carbonates do not exceed a concentration of 5 percent calcium carbonate equivalent, the range of pH is between 5.6 and 8.4, and electrical conductivity is 4 mmhos/cm or less.

Subgroup 2K (Wet-Calcareous)

Soil criteria is the same as Group 2 except:

_ In the upper 12 inches (30 cm) of the soil profile free carbonates range between 5 and 15 percent calcium carbonate equivalent and the range of pH is between 6.5 and 8.4.

Group 3 (Loamy)

Soil depth to a restrictive layer is at least 40 inches (100 cm). The depth to a water table during the growing season is at least 4 feet (120 cm). If the soil is frequently or occasionally flooded with duration of brief, long, or very long, it must be for less than 2 months during the growing season. The available water capacity is at least 9 inches (22.5 cm). In the upper 12 inches (30 cm) of the soil profile free carbonates do not exceed a concentration of 5 percent calcium carbonate equivalent, the range of pH is between 5.6 and 8.4, and electrical conductivity is 2 mmhos/cm or less. The texture is non-clayey between 8 inches (20 cm) and 48 inches (120 cm).

Group 4 (Clayey Favorable)

Soil depth to a restrictive layer is at least 20 inches (50 cm). The depth to a water table during the growing season is at least 4 feet (120 cm). The depth to a water table may be less than 4 feet (120 cm) if it is for less than 2 months during the growing season. The available water capacity is at least 6 inches (15 cm). In the upper 12 inches (30 cm) of the soil profile free carbonates do not exceed a concentration of 5 percent calcium carbonate equivalent, the range of pH is between 5.6 and 8.4, and electrical conductivity is 4 mmhos/cm or less. The texture between 8 inches (20cm) and 20 inches (50 cm) is non-clayey over >35% clay.

Subgroup 4K (Clayey Favorable-Calcareous)

Soil criteria is the same as Group 4 except:

_ In the upper 12 inches (30 cm) of the soil profile free carbonates range between 5 and 15 percent calcium carbonate equivalent and the range of pH is between 6.5 and 8.4.

Subgroup 4C (Clayey)

Soil depth to a restrictive layer is at least 20 inches (50 cm). The depth to a water table during the growing season is at least 4 feet (120 cm). The depth to a water table may be less than 4 feet (120 cm) if it is for less than 2 months during the growing season. The available water capacity is at least 6 inches (15 cm). In the upper 12 inches (30 cm) of the soil profile free carbonates do not exceed a concentration of 5 percent calcium carbonate equivalent, the range of pH is between 5.6 and 8.4, and electrical conductivity is 4 mmhos/cm or less. The whole soil profile is >35% clay, but the 0 to 8 inches (20 cm) can be non-clayey

Subgroup 4CK (Clayey-Calcareous)

Soil criteria is the same as Group 4C except:

_ In the upper 12 inches (30 cm) of the soil profile free carbonates range between 5 and 15 percent calcium carbonate equivalent and the range of pH is between 6.5 and 8.4.

Group 5 (Droughty)

Soil depth to a restrictive layer is at least 40 inches (100 cm). The depth to a water table during the growing season is at least 4 feet (120 cm). If the soil is frequently or occasional flooded with duration of brief, long, or very long, it is for less than 2 months during the growing season. The available water capacity is at between 6 and 9 inches (15 and 23 cm). In the upper 12 inches (30 cm) of the soil profile free carbonates do not exceed a concentration of 5 percent calcium carbonate equivalent, the range of pH is between 5.6 and 8.4, and electrical conductivity is 4 mmhos/cm or less. The whole soil profile is non-sandy or loamy or loamy-skeletal.

Subgroup 5K (Droughty-Calcareous)

Soil criteria is the same as Group 5 except:

_ In the upper 12 inches (30 cm) of the soil profile free carbonates range between 5 and 15 percent calcium carbonate equivalent and the range of pH is between 6.5 and 8.4.

Group 6 (Very Droughty)

Soil depth to a restrictive layer is at least 20 inches (50 cm). The depth to a water table during the growing season is at least 4 feet (120 cm). The depth to a water table may be less than 4 feet (120 cm) if it is for less than 2 months during the growing season. The available water capacity is between 3 and 6 inches (8 and 15 cm). In the upper 12 inches (30 cm) of the soil profile free carbonates do not exceed a concentration of 5 percent calcium carbonate equivalent, the range of pH is between 5.6 and 8.4, and electrical conductivity is 4 mmhos/cm or less. The soil has a non-sandy surface, and is loamy/loamy skeletal over sands/gravels. The drainage class for the soil is excessively, somewhat excessively, or well drained.

Subgroup 6K (Very Droughty-Calcareous)

Soil criteria is the same as Group 6 except:

_ In the upper 12 inches (30 cm) of the soil profile free carbonates range between 5 and 15 percent calcium carbonate equivalent and the range of pH is between 6.5 and 8.4.

Subgroup 6D (Droughty-Moderately deep)

Soil depth to a restrictive layer is between 20 and 40 inches (50 and 100 cm). The depth to a water table during the growing season is at least 4 feet (120 cm). The depth to a water table may be less than 4 feet (120 cm) if it is for less than 2 months during the growing season. The available water capacity is at least 6 inches (15 cm). In the upper 12 inches (30 cm) of the soil profile free carbonates do not exceed a concentration of 5 percent calcium carbonate equivalent, the range of pH is between 5.6 and 8.4, and electrical conductivity is 4 mmhos/cm or less. The soil has a non-sandy surface, and is loamy/loamy skeletal over impervious layer.

Subgroup 6DK (Droughty-Moderately deep-Calcareous)

Soil criteria is the same as Group 6D except:

_ In the upper 12 inches (30 cm) of the soil profile free carbonates range between 5 and 15 percent calcium carbonate equivalent and the range of pH is between 6.5 and 8.4.

Group 7 (Sandy)

Soil depth to a restrictive layer is at least 40 inches (100 cm). The depth to a water table during the growing season is at least 4 feet (120 cm). The depth to a water table may be less than 4 feet (120 cm) if it is for less than 2 months during the growing season. The available water capacity is at least 3 inches (8 cm). In the upper 12 inches (30 cm) of the soil profile free carbonates do not exceed a concentration of 5 percent calcium carbonate equivalent, the range of pH is between 5.6 and 8.4, and electrical conductivity is 2 mmhos/cm or less. All horizons have a sandy texture.

Group 8 (Loamy-Calcareous)

Soil depth to a restrictive layer is at least 40 inches (100 cm). The depth to a water table during the growing season is at least 4 feet (120 cm). The depth to a water table may be less than 4 feet (120 cm) if it is for less than 2 months during the growing season. The available water capacity is at least 9 inches (22.5 cm). In the upper 12 inches (30 cm) of the soil profile free carbonates range between 5 and 15 percent calcium carbonate equivalent, the range of pH is between 6.5 and 8.4, and electrical conductivity is 4 mmhos/cm or less. The texture is non-clayey between 8 inches (20 cm) and 48 inches (120 cm).

Subgroup 9L (Dry-Saline/Alkaline)

Soil depth to a restrictive layer is at least 20 inches (50 cm). The depth to a water table during the growing season is > 1.5 feet (45 cm). The depth to a water table may be less than 1.5 feet (45 cm) if it is for less than 2 months during the growing season. The available water capacity is at least 3 inches (8 cm). In the upper 12 inches (30 cm) of the soil profile, the range of electrical conductivity is between 4 and 16 mmhos/cm. Sodium Adsorption Ratio (SAR) will be > 13. Soil texture will vary, and will be saline and/or sodic.

Subgroup 9W (Wet-Saline/Alkaline)

Soil depth to a restrictive layer is at least 20 inches (50 cm). The depth to a water table during the growing season is between 1.5 and 5 feet (45 and 150 cm). The available water capacity is at least 2 inches (5 cm). In the upper 12 inches (30 cm) of the soil profile electrical conductivity is between 4 and 16 mmhos/cm. Sodium Adsorption Ratio (SAR) will be > 13. Soil texture will vary, and will be saline and/or sodic. These soils are poorly or very poorly drained.

Group 10 (On-site Evaluation)

Soils have one or more characteristics that are severely imitating to the planting and growth of trees and shrubs: soil depth is less than 20 inches (50 cm); available water capacity is less than 3 inches (8.0 cm); depth to a water table during the growing season is less than 0.5 feet (15 cm) or occurs for longer than 3 months during the growing season; in the upper 12 inches (30 cm) of the soil profile free carbonates are greater than 40 percent calcium carbonate equivalent, pH is less than 4.0 or greater than 8.4, electrical conductivity is greater than 16 mmhos/cm, or sodium adsorption ratio is 25 percent or greater. Slopes > 30%. All channeled phases that are frequently or occasionally flooded. Soils that occasionally or frequently pond for long or very long duration.

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1	CONIFEROUS TREES	Arborvitae, American or Northern White Cedar <i>Thuja occidentalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	25-30/20	15-20	25-30/20
1	CONIFEROUS TREES	Arborvitae, Oriental 1/ <i>Thuja orientalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	15-20/15
1	CONIFEROUS TREES	Baldcypress <i>Taxodium distichum</i>	Not Recommended	Not Recommended	20-25	25-30/20	20-25	30-35/20	20-30	40-50/20
1	CONIFEROUS TREES	Fir, Douglas <i>Pseudotsuga menziesii</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	30-35/20	20-30	40-50/20
1	CONIFEROUS TREES	Fir, White <i>Abies concolor</i>	Not Recommended	Not Recommended	20-25	30-45/30	20-25	30-45/25	20-30	40-50/25
1	CONIFEROUS TREES	Juniper, Rocky Mountain 1/ <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1	CONIFEROUS TREES	Pine, Austrian <i>Pinus nigra</i>	5-20	30-50/20-30	15-30	30-55/20	20-30	35-50/20	20-35	40-60/20
1	CONIFEROUS TREES	Pine, Eastern White <i>Pinus strobus</i>	Not Recommended	Not Recommended	25-30	35-40/20	20-25	40-50/20	30-35	40-60/20
1	CONIFEROUS TREES	Pine, Jack <i>Pinus banksiana</i>	15-20	30-40/15	15-20	35-45/15	20-30	35-45/15	20-30	35-45/15-20
1	CONIFEROUS TREES	Pine, Limber 1/ <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-45/15-20	15-20	30-45/15-20	20-25	35-55/15-20
1	CONIFEROUS TREES	Pine, Ponderosa 1/ <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-55/20	20-30	35-55/20	20-35	40-60/20
1	CONIFEROUS TREES	Pine, Southwestern White 1/ <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-55/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1	CONIFEROUS TREES	Redcedar, Eastern 1/ <i>Juniperus virginiana</i>	10-20	20-25/15	10-20	20-25/15	10-25	25-35/15-20	15-25	30-40/20
1	CONIFEROUS TREES	Spruce, Colorado Blue <i>Picea pungens</i>	15-20	25-35/20-30	15-20	30-40/20-30	20-25	30-45/20-30	15-20	40-60/25-30
1	CONIFEROUS TREES	Spruce, Norway <i>Picea abies</i>	Not Recommended	Not Recommended	25-30	30-40/20	25-30	30-45/20	25-35	45-60/25

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1	CONIFEROUS TREES	Spruce, White <i>Picea glauca</i> (variety Black Hills)	15-20	25-35/15	20-25	30-40/20	20-25	30-45/20	20-30	30-45/20
1	DECIDUOUS TREES	Apricot, Manchurian <i>Prunus armeniaca</i>	Not Recommended	Not Recommended	5-10	10-15/10	10-15	10-15/10	10-20	10-20/10
1	DECIDUOUS TREES	Ash, Green 1/, 3/ <i>Fraxinus pennsylvanica</i>	15-20	25-35/25	20-25	30-40/30	20-30	35-50/3	25-30	40-60/30-40
1	DECIDUOUS TREES	Aspen, Quaking 1/ <i>Populus tremuloides</i>	15-20	30-40	15-20	30-40	15-20	30-40	15-20	30-40
1	DECIDUOUS TREES	Basswood/ Linden, American <i>Tilia americana</i>	20-25	30-40/30	20-30	30-40/30	20-30	35-45/30	25-35	50-70/30-40
1	DECIDUOUS TREES	Birch, Paper 4/ <i>Betula papyrifera</i>	Not Recommended	Not Recommended	20-30 (Niobrara Valley only)	15-25/45	20-30 15-25/45		20-30	15-25/50
1	DECIDUOUS TREES	Birch, River 4/ <i>Betula nigra</i>	Not Recommended	Not Recommended	20-30 (Niobrara Valley only)	15-25/45	20-30 15-25/45		20-30	15-25/50
1	DECIDUOUS TREES	Boxelder <i>Acer negundo</i>	15-20	25-35/20	15-20	25-35/20	20-25	30-35/20	20-25	35-40/20
1	DECIDUOUS TREES	Catalpa, Northern 1/ <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	25-30	25-30/20	25-30	30-40/20	25-30	40-50/25
1	DECIDUOUS TREES	Cherry, Black <i>Prunus serotina</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	35-40/20	20-30	30-50/20
1	DECIDUOUS TREES	Cottonwood, Eastern 1/ <i>Populus deltoides</i> Recom. cultivars: Might Mo, Noreaster, Platte	30-55	60-80/40	30-55	65-85/40	45-55	65-85/40-50	50-60	70-90/40-60
1	DECIDUOUS TREES	Crabapple <i>Malus sp.</i> Recom. cultivars: Radiant, Siberian, Midwest 1/, Roselow Sargent	8-12	10-15/15	10-15	10-15/15	10-15	10-15/15	5-20	15-20/15
1	DECIDUOUS TREES	Crabapple, Prairie <i>Malus ionensis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	5-20	15-20/15	5-20	15-20/15
1	DECIDUOUS TREES	Elm, American 1/ <i>Ulmus americana</i>	15-30	15-35/20	15-35	20-40/20	25-40	25-40/20	25-40	55-60/30

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1	DECIDUOUS TREES	Elm, Siberian 1/ <i>Ulmus pumila</i>	15-30	15-35/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1	DECIDUOUS TREES	Hackberry 1/ <i>Celtis occidentalis</i>	15-20	30-40/20	20-25	40-50/20	20-30	45-55/20	20-30	50-60/30
1	DECIDUOUS TREES	Hawthorn, Cockspur 1/ <i>Crataegus crusgalli</i>	15-20	15-20/15	15-20	15-20/15	15-20	15-20/15	15-20	15-20/15
1	DECIDUOUS TREES	Hawthorn, Washington1/ <i>Crataegus phaenopyrum</i>	15-20	15-20/15	15-20	15-20/15	15-20	15-20/15	15-20	15-20/15
1	DECIDUOUS TREES	Hickory, Bitternut <i>Carya cordiformis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	45-55/20
1	DECIDUOUS TREES	Hickory, Shagbark <i>Carya ovata</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	45-55/20
1	DECIDUOUS TREES	Honeylocust 1/ <i>Gleditsia triacanthos</i>	15-25	30-40/20	20-30	30-40/20	25-30	35-45/20	25-35	40-50/25-30
1	DECIDUOUS TREES	Hophornbeam, Eastern <i>Ostrya virginiana</i>	Not Recommended	Not Recommended	10-15 15-20/10		10-20	20-25/10	15-20	20-25/10-20
1	DECIDUOUS TREES	Kentucky Coffeetree <i>Gymnocladus dioicus</i>	20-25	30-40/15	25-30	30-40/20	25-30	35-45/20	25-30	45-70/25-30
1	DECIDUOUS TREES	Locust, Black 1/, 2/ <i>Robinia pseudoacacia</i>	20-25	25-35/15	25-30	25-35/15	25-30	35-45/20	25-30	40-50/20
1	DECIDUOUS TREES	Maple, Amur <i>Acer ginnala</i> Recommended cultivar: Flame	10-15	10-15/15	10-15	10-15/15	15-20	15-20/15	15-20	15-20/15
1	DECIDUOUS TREES	Maple, Silver <i>Acer saccharinum</i>	25-30	30-40/20-25	25-30	35-45/20-25	30-35	40-60/30-40	35-40	50-70/30-50
1	DECIDUOUS TREES	Maple, Sugar <i>Acer saccharum</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	40-50/30
1	DECIDUOUS TREES	Mulberry, Red 1/ <i>Morus rubra</i>	15-20	15-25/15	15-20	30-35/15-20	20-25	35-40/20	20-25	40-45/25-30
1	DECIDUOUS TREES	Mulberry, Russian or White 1/ <i>Morus alba var. tatarica</i>	15-20	15-25/15	15-20	30-35/15-20	20-25	35-40/20	20-25	40-45/25-30

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1	DECIDUOUS TREES	Oak, Black <i>Quercus velutina</i>	Not Recommended	Not Recommended	15-20	35-50/20-25	20-25	40-50/30	25-30	40-60/30-40
1	DECIDUOUS TREES	Oak, Bur 1/ <i>Quercus macrocarpa</i>	15-20	25-35/20-25	15-25	30-40/20-30	20-25	45-55/40-50	25-30	60-80/40-60
1	DECIDUOUS TREES	Oak, Chinkapin <i>Quercus muhlenbergii</i>	Not Recommended	Not Recommended	15-20	35-50/20-25	20-25	40-50/30	25-30	40-60/30-40
1	DECIDUOUS TREES	Oak, English <i>Quercus robur</i>	Not Recommended	Not Recommended	25-35	45-55	25-35	50-60	30-40	55-65
1	DECIDUOUS TREES	Oak, Gambel 1/ <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1	DECIDUOUS TREES	Oak, Northern Red <i>Quercus rubra</i>	Not Recommended	Not Recommended	15-20	35-50/20-25	20-25	40-50/30	25-30	40-60/30-40
1	DECIDUOUS TREES	Oak, Pin <i>Quercus palustris</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	40-60/30-40
1	DECIDUOUS TREES	Oak, Swamp White <i>Quercus bicolor</i>	Not Recommended	Not Recommended	15-20 30-40/20		15-25	30-45/20	20-30	40-50/20-30
1	DECIDUOUS TREES	Oak, White <i>Quercus alba</i>	Not Recommended	Not Recommended	15-20 35-50/20-25		20-25	40-50/30	25-30	40-60/30-40
1	DECIDUOUS TREES	Osage-orange 1/ <i>Maclura pomifera</i>	Not Recommended	Not Recommended	15-20	20-25/15	15-20	25-30/15	15-20	30-40/20-25
1	DECIDUOUS TREES	Pawpaw <i>Asimina Adans.</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	15-25/10-20
1	DECIDUOUS TREES	Pear, Chinese (Harbin) <i>Pyrus ussuriensis</i> Recommended cultivar: McDermand	Not Recommended	Not Recommended	15-20	15-20/15	15-20	15-25/15	20-25	20-25/15
1	DECIDUOUS TREES	Pecan, Northern <i>Carya illinoensis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended		60-70 (South of Platte River only)		70-80 (South of Platte River only)
1	DECIDUOUS TREES	Redbud, Eastern 1/ <i>Cercis canadensis</i>	Not Recommended	Not Recommended	10-15	10-15/10	10-20	10-15/10	15-20	15-20/10-20
1	DECIDUOUS TREES	Sycamore, American <i>Platanus occidentalis</i>	Not Recommended	Not Recommended	30	40/50	30-35	40-45/20	35-40	50-70/30-40

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1	DECIDUOUS TREES	Walnut, Black <i>Juglans nigra</i>	Not Recommended	Not Recommended	20-25	30-40/30	20-25	40-50/30	25-30	40-60/30
1	DECIDUOUS TREES	Willow, Black 1/ <i>Salix nigra</i>	20-25	25-35/20	20-25	30-35/20	25-30	30-35/20	25-30	35-50/20
1	DECIDUOUS TREES	Willow, Peachleaf 1/ <i>Salix amygdaloides</i>	20-25	20-30/20	20-25	20-30/20	20-25	20-30/20	20-25	20-30/20
1	DECIDUOUS TREES	Willow, White or Golden 1/ <i>Salix alba</i> (Cultivars Vitellina or Tristis; often called Golden Willow)	20-30	25-35/20	20-25	30-35/20	25-30	30-35/20	25-30	35-40/20
1	CONIFEROUS SHRUBS	Juniper, Common (Prostrate) 1/ <i>Juniperus communis</i>	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15
1	DECIDUOUS SHRUBS	Antelope Bitterbrush <i>Purshia tridentate</i>	2-10		Not Recommended		Not Recommended		Not Recommended	
1	DECIDUOUS SHRUBS	Blackhaw, Rusty <i>Viburnum rufidulum</i>	Not Recommended		Not Recommended		15-20		20-30	
1	DECIDUOUS SHRUBS	Buffaloberry, Silver 1/ <i>Shepherdia argentea</i>	5-8		10-12		10-12		10-12	
1	DECIDUOUS SHRUBS	Buttonbush <i>Cephalanthus occidentalis</i>	Not Recommended		Not Recommended		Not Recommended		8-10	
1	DECIDUOUS SHRUBS	Cherry, Nanking <i>Prunus tomentosa</i>	Not Recommended		4-5		4-5		5-7	
1	DECIDUOUS SHRUBS	Chokeberry, Black <i>Aronia melanocarpa</i>	Not Recommended		4-8		5-8		6-8	
1	DECIDUOUS SHRUBS	Chokecherry, Common 1/ <i>Prunus virginiana</i>	5-8		6-12		6-12		8-14	
1	DECIDUOUS SHRUBS	Coralberry <i>Symphoricarpos orbiculatus</i>	Not Recommended		Not Recommended		2-3		2-3	
1	DECIDUOUS SHRUBS	Cotoneaster, Peking <i>Cotoneaster acutifolia</i>	4-5		5-6		5-8		5-10	

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1	DECIDUOUS SHRUBS	Cranberry, Highbush <i>Viburnum trilobum</i>	Not Recommended		Not Recommended		6-12		10-12	
1	DECIDUOUS SHRUBS	Currant, Buffalo 1/ <i>Ribes odoratum</i>	3-6		3-6		3-6		3-6	
1	DECIDUOUS SHRUBS	Currant, Golden 1/ <i>Ribes aureum</i>	2-4		2-4		4-6		4-6	
1	DECIDUOUS SHRUBS	Dogwood, Gray <i>Cornus racemosa</i>	4-6		6-8		6-8		6-10	
1	DECIDUOUS SHRUBS	Dogwood, Redosier <i>Cornus sericea</i>	5-6		5-7		6-8		8-10	
1	DECIDUOUS SHRUBS	Elderberry <i>Sambucus canadensis</i>	Not Recommended		4-6		4-6		4-8	
1	DECIDUOUS SHRUBS	Euonymus, Winterberry <i>Euonymus bungeanus</i> Recommended cultivar: Pink Lady Winterberry	5-10		5-10		8-14		8-14	
1	DECIDUOUS SHRUBS	Hazelnut, American <i>Corylus americana</i>	Not Recommended		6-8		6-8		6-10	
1	DECIDUOUS SHRUBS	Indigo, False <i>Amorpha fruticosa</i>	4-6		6-8		6-8		8-10	
1	DECIDUOUS SHRUBS	Lilac 1/ <i>Syringa vulgaris</i>	5-6		5-6		5-8		6-10	
1	DECIDUOUS SHRUBS	Mahogany, Mountain 1/ <i>Cercocarpus montana</i>	5-10		Not Recommended		Not Recommended		Not Recommended	
1	DECIDUOUS SHRUBS	Nannyberry 1/ <i>Viburnum lentago</i>	Not Recommended		Not Recommended		15-25		15-25	
1	DECIDUOUS SHRUBS	Peashrub, Siberian 1/ <i>Caragana arborescens</i>	3-6		4-8		6-10		8-12	
1	DECIDUOUS SHRUBS	Plum, American 1/ <i>Prunus americana</i>	5-7		5-8		5-8		6-10	
1	DECIDUOUS SHRUBS	Rose, Arkansas (Prairie) <i>Rosa arkansana</i>	1-2		1-2		1-2		1-2	

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1	DECIDUOUS SHRUBS	Rose, Hansen Hedge <i>Rosa</i> Sp. <i>Rosa rugosa</i> x <i>R. woodsii</i>	4-6		4-6		4-8		6-8	
1	DECIDUOUS SHRUBS	Rose, Woods <i>Rosa woodsii</i>	3-5		3-5		4-5		4-5	
1	DECIDUOUS SHRUBS	Sagebrush, Big <i>Artemisia tridentata</i>	3-6		Not Recommended		Not Recommended		Not Recommended	
1	DECIDUOUS SHRUBS	Sagebrush, Silver <i>Artemisia cana</i>	3-6		Not Recommended		Not Recommended		Not Recommended	
1	DECIDUOUS SHRUBS	Saltbush, Fourwing 1/ <i>Atriplex canescens</i>	2-5		Not Recommended		Not Recommended		Not Recommended	
1	DECIDUOUS SHRUBS	Sandcherry, Western <i>Prunus besseyi</i>	2-3		2-3		2-4		3-6	
1	DECIDUOUS SHRUBS	Serviceberry, Saskatoon 1/ <i>Amelanchier alnifolia</i> (Nutt)	5-7		5-7		6-10		6-10	
1	DECIDUOUS SHRUBS	Snowberry, Common <i>Symphoricarpos albus</i>	Not Recommended		Not Recommended		3-4		3-4	
1	DECIDUOUS SHRUBS	Snowberry, Western <i>Symphoricarpos occidentalis</i>	3-4		3-4		3-4		3-4	
1	DECIDUOUS SHRUBS	Sumac, Skunkbush 1/ <i>Rhus trilobata</i> Recommended cultivars: Big Horn, Konza Fragrant	3-5		4-6		4-6		4-8	
1	DECIDUOUS SHRUBS	Willow, Sandbar <i>Salix exigua</i>	10-15		10-15		10-15		10-15	

1/ Adapted to calcareous soils

2/ Black locust can be severely impacted by insect damage; recommend limiting use to wildlife and pollinator plantings, rather than for windbreaks

3/ Green Ash - only to be used in diverse tree and shrub plantings, **not in windbreaks**

4/ Conservation mulch improves growth and survival

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1K	CONIFEROUS TREES	Arborvitae, American or Northern White Cedar 1/ <i>Thuja occidentalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	25-30/20	15-20	25-30/20
1K	CONIFEROUS TREES	Arborvitae, Oriental 1/ <i>Thuja orientalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	15-20/15
1K	CONIFEROUS TREES	Juniper, Rocky Mountain 1/ <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1K	CONIFEROUS TREES	Pine, Bristlecone 1/ <i>Pinus aristata</i>	5-10	25-30/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1K	CONIFEROUS TREES	Pine, Limber 1/ <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-45/15-20	15-20	30-45/15-20	20-25	35-55/15-20
1K	CONIFEROUS TREES	Pine, Ponderosa 1/ <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-55/20	20-30	35-55/20	20-35	40-60/20
1K	CONIFEROUS TREES	Pine, Southwestern White 1/ <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-55/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1K	CONIFEROUS TREES	Redcedar, Eastern 1/ <i>Juniperus virginiana</i>	10-20	20-25/15	10-20	20-25/15	10-25	25-35/15-20	15-25	30-40/20
1K	DECIDUOUS TREES	Apricot, Manchurian <i>Prunus armeniaca</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	10-110	10-20	10-20/10
1K	DECIDUOUS TREES	Ash, Green 1/, 3/ <i>Fraxinus pennsylvanica</i>	15-20	25-35/25	20-25	30-40/30	20-30	35-50/3	25-30	40-60/30-40
1K	DECIDUOUS TREES	Aspen, Quaking 1/ <i>Populus tremuloides</i>	15-20	30-40	15-20	30-40	15-20	30-40	15-20	30-40
1K	DECIDUOUS TREES	Catalpa, Northern 1/ <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	25-30	25-30/20	25-30	30-40/20	25-30	40-50/25
1K	DECIDUOUS TREES	Cottonwood, Eastern 1/ <i>Populus deltoides</i> Recom. cultivars: Might Mo, Noreaster, Platte	30-55	60-80/40	30-55	65-85/40	45-55	65-85/40-50	50-60	70-90/40-60
1K	DECIDUOUS TREES	Crabapple <i>Malus sp.</i> Recom. cultivars: Radiant, Siberian, Midwest 1/, Roselow Sargent	8-12	10-15/15	10-15	10-15/15	10-15	10-15/15	5-20	15-20/15
1K	DECIDUOUS TREES	Crabapple, Prairie <i>Malus ionensis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	5-20	15-20/15	5-20	15-20/15
1K	DECIDUOUS TREES	Elm, American 1/ <i>Ulmus americana</i>	15-30	15-35/20	15-35	20-40/20	25-40	25-40/20	25-40	55-60/30

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1K	DECIDUOUS TREES	Elm, Siberian 1/ <i>Ulmus pumila</i>	15-30	15-35/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1K	DECIDUOUS TREES	Hackberry 1/ <i>Celtis occidentalis</i>	15-20	30-40/20	20-25	40-50/20	20-30	45-55/20	20-30	50-60/30
1K	DECIDUOUS TREES	Hawthorn, Cockspur 1/ <i>Crataegus crusgalli</i>	15-20	15-20/15	15-20	15-20/15	15-20	15-20/15	15-20	15-20/15
1K	DECIDUOUS TREES	Hawthorn, Washington 1/ <i>Crataegus phaenopyrum</i>	15-20	15-20/15	15-20	15-20/15	15-20	15-20/15	15-20	15-20/15
1K	DECIDUOUS TREES	Honeylocust 1/ <i>Gleditsia triacanthos</i>	15-25	30-40/20	20-30	30-40/20	25-30	35-45/20	25-35	40-50/25-30
1K	DECIDUOUS TREES	Locust, Black 1/, 2/ <i>Robinia pseudoacacia</i>	20-25	25-35/15	25-30	25-35/15	25-30	35-45/20	25-30	40-50/20
1K	DECIDUOUS TREES	Mulberry, Red 1/ <i>Morus rubra</i>	15-20	15-25/15	15-20	30-35/15-20	20-25	35-40/20	20-25	40-45/25-30
1K	DECIDUOUS TREES	Mulberry, Russian or White 1/ <i>Morus alba var. tatarica</i>	15-20	15-25/15	15-20	30-35/15-20	20-25	35-40/20	20-25	40-45/25-30
1K	DECIDUOUS TREES	Oak, Bur 1/ <i>Quercus macrocarpa</i>	15-20	25-35/20-25	15-25	30-40/20-30	20-25	45-55/40-50	25-30	60-80/40-60
1K	DECIDUOUS TREES	Oak, English 1/ <i>Quercus robur</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-35	50-60	30-40	55-65
1K	DECIDUOUS TREES	Oak, Gambel 1/ <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1K	DECIDUOUS TREES	Osage-orange 1/ <i>Maclura pomifera</i>	Not Recommended	Not Recommended	15-20	20-25/15	15-20	25-30/15	15-20	30-40/20-25
1K	DECIDUOUS TREES	Redbud, Eastern 1/ <i>Cercis canadensis</i>	Not Recommended	Not Recommended	10-15	10-15/10	10-20	10-15/10	15-20	15-20/10-20
1K	DECIDUOUS TREES	Willow, Black 1/ <i>Salix nigra</i>	20-25	25-35/20	20-25	30-35/20	25-30	30-35/20	25-30	35-50/20
1K	DECIDUOUS TREES	Willow, Peachleaf 1/ <i>Salix amygdaloides</i>	20-25	20-30/20	20-25	20-30/20	20-25	20-30/20	20-25	20-30/20
1K	DECIDUOUS TREES	Willow, White or Golden 1/ <i>Salix alba</i> (Cultivars Vitellina or Tristis; often called Golden Willow)	20-30	25-35/20	20-25	30-35/20	25-30	30-35/20	25-30	35-40/20

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1K	CONIFEROUS SHRUBS	Juniper, Common 1/ <i>Juniperus communis</i>	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15
1K	DECIDUOUS SHRUBS	Antelope Bitterbrush 1/ <i>Purshia tridentate</i>	2-10		Not Recommended		Not Recommended		Not Recommended	
1K	DECIDUOUS SHRUBS	Buffaloberry, Silver 1/ <i>Shepherdia argentea</i>	5-8		10-12		10-12		10-12	
1K	DECIDUOUS SHRUBS	Chokecherry, Common 1/ <i>Prunus virginiana</i>	5-8		6-12		6-12		8-14	
1K	DECIDUOUS SHRUBS	Currant, Buffalo 1/ <i>Ribes odoratum</i>	3-6		3-6		3-6		3-6	
1K	DECIDUOUS SHRUBS	Currant, Golden 1/ <i>Ribes aureum</i>	2-4		2-4		4-6		4-6	
1K	DECIDUOUS SHRUBS	Lilac 1/ <i>Syringa vulgaris</i>	5-6		5-6		5-8		6-10	
1K	DECIDUOUS SHRUBS	Mahogany, Mountain 1/ <i>Cercocarpus montana</i>	5-10		Not Recommended		Not Recommended		Not Recommended	
1K	DECIDUOUS SHRUBS	Nannyberry 1/ <i>Viburnum lentago</i>	Not Recommended		Not Recommended		15-25		15-25	
1K	DECIDUOUS SHRUBS	Peashrub, Siberian 1/ <i>Caragana arborescens</i>	3-6		4-8		6-10		8-12	
1K	DECIDUOUS SHRUBS	Plum, American 1/ <i>Prunus americana</i>	5-7		5-8		5-8		6-10	
1K	DECIDUOUS SHRUBS	Saltbush, Fourwing 1/ <i>Atriplex canescens</i>	2-5		Not Recommended		Not Recommended		Not Recommended	
1K	DECIDUOUS SHRUBS	Serviceberry, Saskatoon 1/ <i>Amelanchier alnifolia (Nutt)</i>	5-7		5-7		6-10		6-10	
1K	DECIDUOUS SHRUBS	Sumac, Skunkbush 1/ <i>Rhus trilobata</i> Recommended cultivars: Big Horn, Konza Fragrant	3-5		4-6		4-6		4-8	

1/ Adapted to calcareous soils

2/ Black locust can be severely impacted by insect damage; recommend limiting use to wildlife and pollinator plantings, rather than for windbreaks

3/ Green Ash - only to be used in diverse tree and shrub plantings, **not in windbreaks**

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1S	CONIFEROUS TREES	Arborvitae, American or Northern White Cedar <i>Thuja occidentalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	25-30/20	15-20	25-30/20
1S	CONIFEROUS TREES	Arborvitae, Oriental <i>Thuja orientalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	15-20/15
1S	CONIFEROUS TREES	Juniper, Rocky Mountain <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1S	CONIFEROUS TREES	Pine, Austrian <i>Pinus nigra</i>	5-25	30-50/20	15-30	30-520	20-30	35-50/20	20-35	40-60/20
1S	CONIFEROUS TREES	Pine, Eastern White <i>Pinus strobus</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-25	40-50/20	30-35	40-60/20
1S	CONIFEROUS TREES	Pine, Jack <i>Pinus banksiana</i>	15-20	25-315	15-20	30-40/15	15-30	30-40/15	20-30	40-415
1S	CONIFEROUS TREES	Pine, Limber <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-415-20	15-20	30-415-20	20-25	35-515-20
1S	CONIFEROUS TREES	Pine, Pinyon [Two needle Pinyon] <i>Pinus edulis</i>	5-10	15-20/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1S	CONIFEROUS TREES	Pine, Ponderosa <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-520	20-30	35-520	20-35	40-60/20
1S	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-520	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1S	CONIFEROUS TREES	Redcedar, Eastern <i>Juniperus virginiana</i>	10-20	20-215	10-20	20-215	10-25	25-315-20	15-25	30-40/20
1S	CONIFEROUS TREES	Spruce, Colorado Blue <i>Picea pungens</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	30-420-25	20-30	40-60/25
1S	CONIFEROUS TREES	Spruce, Norway <i>Picea abies</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	30-420	25-30	45-60/25
1S	CONIFEROUS TREES	Spruce, White <i>Picea glauca</i> (variety Black Hills)	15-20	25-315	20-25	30-40/20	20-25	30-420	25-30	30-420
1S	DECIDUOUS TREES	Apricot, Manchurian <i>Prunus armeniaca</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	10-110	10-20	10-20/10
1S	DECIDUOUS TREES	Ash, Green 1/ <i>Fraxinus pennsylvanica</i>	15-20	25-325	20-25	30-40/30	20-30	35-50/3	25-30	40-60/30-40
1S	DECIDUOUS TREES	Aspen, Quaking <i>Populus tremuloides</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	20-30	15-20	20-30

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1S	DECIDUOUS TREES	Basswood/ Linden, American <i>Tilia americana</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	35-430	25-30	40-50/30
1S	DECIDUOUS TREES	Birch, Paper <i>Betula papyrifera</i>	Not Recommended	Not Recommended	20-30 (Niobrara Valley only)	415-25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1S	DECIDUOUS TREES	Birch, River <i>Betula nigra</i>	Not Recommended	Not Recommended	20-30 (Niobrara Valley only)	15-25/45	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1S	DECIDUOUS TREES	Boxelder <i>Acer negundo</i>	15-20	25-30-20	15-20	25-30/20	20-25	30-35/20	20-25	35-40/20
1S	DECIDUOUS TREES	Catalpa, Northern <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	25-30	25-30/20	25-30	30-40/20	25-30	40-50/25
1S	DECIDUOUS TREES	Cottonwood, Eastern <i>Populus deltoides</i> Recommended cultivars: Might Mo, Noreaster, Platte	30-55	60-80/40	30-55	65-80/40	45-55	65-80/40-50	50-60	70-90/40-50
1S	DECIDUOUS TREES	Elm, Siberian <i>Ulmus pumila</i>	20-25	20-320	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1S	DECIDUOUS TREES	Hackberry <i>Celtis occidentalis</i>	15-20	30-40/20	20-25	40-50/20	20-30	45-50/20	20-30	50-60/30
1S	DECIDUOUS TREES	Hawthorn, Cockspur <i>Crataegus crusgalli</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	15-20/15	15-20	15-20/15
1S	DECIDUOUS TREES	Hawthorn, Washington <i>Crataegus phaenopyrum</i>	Not Recommended	Not Recommended	10-15	15-20/15	10-15	15-20/15	15-20	15-20/15
1S	DECIDUOUS TREES	Honeylocust <i>Gleditsia triacanthos</i>	15-25	30-40/20	20-30	30-40/20	25-30	35-420	25-35	40-50/25-30
1S	DECIDUOUS TREES	Kentucky Coffeetree <i>Gymnocladus dioica</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	35-420	25-30	45-70/25-30
1S	DECIDUOUS TREES	Locust, Black 2/ <i>Robinia pseudoacacia</i>	20-25	25-30/15	25-30	25-30/15	25-30	35-40/20	25-30	40-50/20
1S	DECIDUOUS TREES	Maple, Amur <i>Acer ginnala</i> Recommended cultivar:	10-15	10-115	10-15	10-115	15-20	15-20/15	15-20	15-20/15
1S	DECIDUOUS TREES	Maple, Silver <i>Acer saccharinum</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	30-35	40-50/30-40	35-40	50-60/30-40
1S	DECIDUOUS TREES	Mulberry, Red <i>Morus rubra</i>	15-20	15-20/15	15-20	30-35/15-20	20-25	35-40/20	20-25	40-45/25-30

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1S	DECIDUOUS TREES	Mulberry, Russian or White <i>Morus alba var. tatarica</i>	15-20	15-20/15	15-20	30-35/15-20	15-20	35-40/20	20-25	40-45/25-30
1S	DECIDUOUS TREES	Oak, Bur <i>Quercus macrocarpa</i>	15-20	25-30/15-20	20-25	30-40/20	20-25	35-40/30	25-30	40-60/30-40
1S	DECIDUOUS TREES	Oak, Gambel <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1S	DECIDUOUS TREES	Oak, Swamp White <i>Quercus bicolor</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-25	30-40/20	25-30	40-50/20-30
1S	DECIDUOUS TREES	Osage-orange <i>Maclura pomifera</i>	Not Recommended	Not Recommended	15-20	20-25/15	15-20	25-30/15	15-20	30-35/20-25
1S	CONIFEROUS SHRUBS	Juniper, Common 1/ <i>Juniperus communis</i>	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15
1S	DECIDUOUS SHRUBS	Currant, Buffalo <i>Ribes odoratum</i>	3-6		3-6		3-6		3-6	
1S	DECIDUOUS SHRUBS	Currant, Golden <i>Ribes aureum</i>	2-4		2-4		4-6		4-6	
1S	DECIDUOUS SHRUBS	Dogwood, Gray <i>Cornus racemosa</i>	Not Recommended		6-8		6-8		6-8	
1S	DECIDUOUS SHRUBS	Dogwood, Redosier <i>Cornus sericea</i>	5-6		5-7		6-8		8-10	
1S	DECIDUOUS SHRUBS	Elderberry <i>Sambucus canadensis</i>	Not Recommended		4-6		4-6		4-8	
1S	DECIDUOUS SHRUBS	Euonymus, Winterberry <i>Euonymus bungeanus</i> Recommended cultivar: Pink Lady Winterberry	6-10		6-10		8-14		8-14	
1S	DECIDUOUS SHRUBS	Indigo, False <i>Amorpha fruticosa</i>	4-6		6-8		6-8		8-10	
1S	DECIDUOUS SHRUBS	Lilac <i>Syringa vulgaris</i>	5-6		5-6		5-8		6-10	
1S	DECIDUOUS SHRUBS	Mahogany, Mountain <i>Cercocarpus montana</i>	5-10		Not Recommended		Not Recommended		Not Recommended	
1S	DECIDUOUS SHRUBS	Nannyberry <i>Viburnum lentago</i>	Not Recommended		Not Recommended		15-25		15-25	

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1S	DECIDUOUS SHRUBS	Peashrub, Siberian <i>Caragana arborescens</i>	6-8		6-8		6-10		8-10	
1S	DECIDUOUS SHRUBS	Plum, American <i>Prunus americana</i>	5-7		5-8		5-8		6-10	
1S	DECIDUOUS SHRUBS	Rose, Arkansas (Prairie) <i>Rosa arkansana</i>	1-2		1-2		1-2		1-2	
1S	DECIDUOUS SHRUBS	Rose, Hansen Hedge <i>Rosa</i> Sp. <i>Rosa rugosa x R. woodsii</i>	4-6		4-6		4-8		6-8	
1S	DECIDUOUS SHRUBS	Rose, Woods <i>Rosa woodsii</i>	3-5		3-5		4-5		4-5	
1S	DECIDUOUS SHRUBS	Sagebrush, Big <i>Artemisia tridentata</i>	3-6		Not Recommended		Not Recommended		Not Recommended	
1S	DECIDUOUS SHRUBS	Sagebrush, Silver <i>Artemisia cana</i>	3-6		Not Recommended		Not Recommended		Not Recommended	
1S	DECIDUOUS SHRUBS	Saltbush, Fourwing <i>Atriplex canescens</i>	2-5		Not Recommended		Not Recommended		Not Recommended	
1S	DECIDUOUS SHRUBS	Sandcherry, Western <i>Prunus besseyi</i>	2-3		2-3		2-4		3-6	
1S	DECIDUOUS SHRUBS	Serviceberry, Saskatoon 1/ <i>Amelanchier alnifolia</i> (Nutt)	5-7		5-7		6-10		6-10	
1S	DECIDUOUS SHRUBS	Snowberry, Common <i>Symphoricarpos albus</i>	Not Recommended		Not Recommended		3-4		3-4	
1S	DECIDUOUS SHRUBS	Snowberry, Western <i>Symphoricarpos occidentalis</i>	3-4		3-4		3-4		3-4	
1S	DECIDUOUS SHRUBS	Sumac, Skunkbush 1/ <i>Rhus trilobata</i> Recommended cultivars: Big horn, Konza fragrant	3-5		4-6		4-6		4-8	

1/ Green Ash - only to be used in diverse tree and shrub plantings; **not windbreaks**

2/ Black Locust - for wildlife and pollinators (refer to table 11)

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1SK	CONIFEROUS TREES	Juniper, Rocky Mountain <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1SK	CONIFEROUS TREES	Pine, Bristlecone <i>Pinus aristata</i>	5-10	25-30/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1SK	CONIFEROUS TREES	Pine, Limber <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-40/15-20	15-20	30-40/15-20	20-25	35-50/15-20
1SK	CONIFEROUS TREES	Pine, Ponderosa <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-50/20	20-30	35-50/20	20-35	40-60/20
1SK	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-50/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1SK	CONIFEROUS TREES	Redcedar, Eastern <i>Juniperus virginiana</i>	10-20	20-25/15	10-20	20-25/15	10-25	25-35/15-20	15-25	30-40/20
1SK	CONIFEROUS SHRUBS	Juniper, Common (Prostrate) <i>Juniperus communis</i>	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15
1K	DECIDUOUS TREES	Apricot, Manchurian <i>Prunus armeniaca</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	10-15/10	10-20	10-20/10
1SK	DECIDUOUS TREES	Ash, Green 1/ <i>Fraxinus pennsylvanica</i>	15-20	25-325	20-25	30-40/30	20-30	35-50/3	25-30	40-60/30-40
1SK	DECIDUOUS TREES	Aspen, Quaking <i>Populus tremuloides</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	20-30	15-20	20-30
1SK	DECIDUOUS TREES	Catalpa, Northern <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	30-35/20	15-20	30-35/20
	DECIDUOUS TREES	Cottonwood, Eastern <i>Populus deltoides</i> Recommended cultivars: Might Mo, Noreaster, Platte	30-55	60-80/40	30-55	65-80/40	45-55	65-80/40-50	50-60	70-90/40-50
1SK	DECIDUOUS TREES	Elm, Siberian <i>Ulmus pumila</i>	15-20	30-35/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1SK	DECIDUOUS TREES	Hackberry <i>Celtis occidentalis</i>	10-15	25-30/20	10-15	25-30/20	10-15	25-30/20	10-15	30-35/30
1SK	DECIDUOUS TREES	Honeylocust <i>Gleditsia triacanthos</i>	Not Recommended	Not Recommended	10-15	20-25/15-20	10-15	20-25/20	25-35	40-50/25-30
1SK	DECIDUOUS TREES	Locust, Black 2/ <i>Robinia pseudoacacia</i>	Not Recommended	Not Recommended	25-30	25-30/15	25-30	35-40/20	25-30	40-50/20

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
1SK	DECIDUOUS TREES	Oak, Bur <i>Quercus macrocarpa</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	25-30/30	15-20	40-60/30-40
1SK	DECIDUOUS TREES	Oak, English <i>Quercus robur</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-35	50-60	30-40	55-65
1SK	DECIDUOUS TREES	Oak, Gambel <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
1SK	DECIDUOUS TREES	Osage-orange <i>Maclura pomifera</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	20-25/15-20	10-15	30-35/20-25
1SK	DECIDUOUS SHRUBS	Antelope Bitterbrush <i>Purshia tridentate</i>	2-3		Not Recommended		Not Recommended		Not Recommended	
1SK	DECIDUOUS SHRUBS	Buffaloberry, Silver <i>Shepherdia argentea</i>	5-8		10-12		10-12		10-12	
1SK	DECIDUOUS SHRUBS	Chokecherry, Common <i>Prunus virginiana</i>	5-8		6-12		6-12		8-14	
1SK	DECIDUOUS SHRUBS	Currant, Buffalo <i>Ribes odoratum</i>	2-4		2-4		3-6		3-6	
1SK	DECIDUOUS SHRUBS	Currant, Golden <i>Ribes aureum</i>	2-4		2-4		4-6		4-6	
1SK	DECIDUOUS SHRUBS	Lilac <i>Syringa vulgaris</i>	5-6		5-6		5-8		6-10	
1SK	DECIDUOUS SHRUBS	Mahogany, Mountain <i>Cercocarpus montana</i>	5-10		Not Recommended		Not Recommended		Not Recommended	
1SK	DECIDUOUS SHRUBS	Peashrub, Siberian <i>Caragana arborescens</i>	6-8		6-8		8-10		8-12	
1SK	DECIDUOUS SHRUBS	Plum, American <i>Prunus americana</i>	5-7		5-8		5-8		6-10	
1SK	DECIDUOUS SHRUBS	Sumac, Skunkbush <i>Rhus trilobata</i> Recommended cultivars: Big horn, Konza fragrant	3-5		4-6		4-6		4-8	

1/ Green Ash - only to be used in diverse tree and shrub plantings; **not windbreaks**

2/ Black Locust - for wildlife and pollinators (refer to table 11)

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
2	CONIFEROUS TREES	Baldcypress <i>Taxodium distichum</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	30-320	20-30	40-50/20
2	DECIDUOUS TREES	Ash, Green 1/, 4/ <i>Fraxinus pennsylvanica</i>	15-20	25-35/25	20-25	30-40/30	20-30	35-50/3	25-30	40-60/30-40
2	DECIDUOUS TREES	Birch, Paper 5/ <i>Betula papyrifera</i>	Not Recommended	Not Recommended	20-30 (Niobrara Valley only)	40/15-25	20-30 (Niobrara Valley only)	40/15-25	20-30	50/15-25
2	DECIDUOUS TREES	Birch, River 5/ <i>Betula nigra</i>	Not Recommended	Not Recommended	20-30 (Niobrara Valley only)	40/15-25	20-30 (Niobrara Valley only)	40/15-25	20-30	50/15-25
2	DECIDUOUS TREES	Boxelder <i>Acer negundo</i>	15-20	25-35/20	15-20	25-35/20	15-20	30-35/20	20-25	35-40/20
2	DECIDUOUS TREES	Cottonwood, Eastern 1/ <i>Populus deltoides</i> Recommended cultivars: Might Mo, Noreaster, Platte	30-55	60-80/40	30-55	65-80/40	45-55	65-80/40-50	50-60	70-90/40-60
2	DECIDUOUS TREES	Maple, Silver <i>Acer saccharinum</i>	Not Recommended	Not Recommended	25-30	35-40/20-25	30-35	40-60/30-40	35-40	50-70/30-50
2	DECIDUOUS TREES	Oak, Pin <i>Quercus palustris</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	40-60/30-40
2	DECIDUOUS TREES	Oak, Swamp White <i>Quercus bicolor</i>	Not Recommended	Not Recommended	15-20	30-40/20	15-25	30-40/20	20-30	40-50/20-30
	DECIDUOUS TREES	Sycamore, American <i>Platanus occidentalis</i>	Not Recommended	Not Recommended	30	40/50	30-35	40-45/20	35-40	50-70/30-40
2	DECIDUOUS TREES	Willow, Black 1/ <i>Salix nigra</i>	20-25	25-35/20	20-25	30-35/20	25-30	30-35/20-25	25-30	40-60/30
2	DECIDUOUS TREES	Willow, Peachleaf 1/ <i>Salix amygdaloides</i>	20-25	20-30/20	20-25	20-30/20	20-25	20-30/20/25	20-25	20-30/30
2	DECIDUOUS TREES	Willow, White or Golden 1/ <i>Salix alba</i> (Cultivars Vitellina or Tristis often called Golden Willow)	20-25	25-35/20	20-25	30-35/20	25-30	30-35/20	25-30	35-45/20-25
2	DECIDUOUS SHRUBS	Dogwood, Redosier <i>Cornus sericea</i>	5-6		5-7		6-8		8-10	
2	DECIDUOUS SHRUBS	Elderberry <i>Sambucus canadensis</i>	Not Recommended		4-6		4-6		4-8	
2	DECIDUOUS SHRUBS	Indigo, False <i>Amorpha fruticosa</i>	4-6		6-8		6-8		8-10	

1/ Adapted to calcareous soils

4/ Green Ash - only to be used in diverse tree and shrub plantings; **not windbreaks**.

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
2K	DECIDUOUS TREES	Ash, Green 1/2/ <i>Fraxinus pennsylvanica</i>	15-20	25-35/25	20-25	30-40/30	20-30	35-50/3	25-30	40-60/30-40
2K	DECIDUOUS TREES	Cottonwood, Eastern 1/ <i>Populus deltoides</i> Recommended cultivars: Might Mo, Noreaster, Platte	30-55	60-80/40	30-55	65-80/40	45-55	65-80/40-50	50-60	70-90/40-60
2K	DECIDUOUS TREES	Sycamore, American <i>Platanus occidentalis</i>	Not Recommended	Not Recommended	30	40/50	30-35	40-45/20	35-40	50-70/30-40
2K	DECIDUOUS TREES	Willow, Black 1/ <i>Salix nigra</i>	20-25	25-30/20	20-25	30-35/20	25-30	30-35/20	25-30	35-50/20
2K	DECIDUOUS TREES	Willow, Peachleaf 1/ <i>Salix amygdaloides</i>	20-25	20-30/20	20-25	20-30/20	20-25	20-30/20	20-25	20-30/20
2K	DECIDUOUS TREES	Willow, White or Golden 1/ <i>Salix alba</i> (Cultivars Vitellina or Tristis often called Golden Willow)	20-30	25-30/20	20-25	30-35/20	25-30	30-35/20	25-30	35-40/20

1/ Adapted to calcareous soils

2/ Green Ash - only to be used in diverse tree and shrub plantings; **not windbreaks**

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
3	CONIFEROUS TREES	Arborvitae, American or Northern White Cedar <i>Thuja occidentalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	25-30/20	15-20	25-30/20
3	CONIFEROUS TREES	Arborvitae, Oriental 1/ <i>Thuja orientalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	15-20/15
3	CONIFEROUS TREES	Baldcypress <i>Taxodium distichum</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	30-35/20	20-30	40-50/20
3	CONIFEROUS TREES	Fir, Douglas <i>Pseudotsuga menziesii</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	30-35/20	20-30	40-50/20
3	CONIFEROUS TREES	Fir, White <i>Abies concolor</i>	Not Recommended	Not Recommended	20-25	30-45/30	20-25	30-45/25	20-30	40-50/25
3	CONIFEROUS TREES	Juniper, Rocky Mountain 1/ <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
3	CONIFEROUS TREES	Pine, Austrian <i>Pinus nigra</i>	5-20	30-50/20-30	15-30	30-50/20	20-30	35-50/20	20-35	40-60/20
3	CONIFEROUS TREES	Pine, Eastern White <i>Pinus strobus</i>	Not Recommended	Not Recommended	25-30	35-40/20	20-25	40-50/20	30-35	40-60/20
3	CONIFEROUS TREES	Pine, Jack <i>Pinus banksiana</i>	15-20	30-40/15	15-20	35-45/15	20-30	35-45/15	20-30	35-45/15-20
3	CONIFEROUS TREES	Pine, Limber 1/ <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-45/15-20	15-20	30-45/15-20	20-25	35-55/15-20
3	CONIFEROUS TREES	Pine, Pinyon [Two needle Pinyon] <i>Pinus edulis</i>	5-10	15-20/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
3	CONIFEROUS TREES	Pine, Ponderosa 1/ <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-55/20	20-30	35-55/20	20-35	40-60/20
3	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-55/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
3	CONIFEROUS TREES	Redcedar, Eastern 1/ <i>Juniperus virginiana</i>	10-20	20-25/15	10-20	20-25/15	10-25	25-35/15-20	15-25	30-40/20
3	CONIFEROUS TREES	Spruce, Colorado Blue <i>Picea pungens</i>	15-20	25-35/20-30	15-20	30-40/20-30	20-25	30-45/20-30	15-20	40-60/25-30
3	CONIFEROUS TREES	Spruce, Norway <i>Picea abies</i>	Not Recommended	Not Recommended	25-30	30-40/20	25-30	30-40/20	25-35	45-60/25

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
3	CONIFEROUS TREES	Spruce, White <i>Picea glauca</i> (variety Black Hills)	15-20	25-35/15	20-25	30-40/20	20-25	30-45/20	20-30	30-45/20
3	DECIDUOUS TREES	Apricot, Manchurian <i>Prunus armeniaca</i>	Not Recommended	Not Recommended	5-10	10-15/10	10-15	10-15/10	10-20	10-20/10
3	DECIDUOUS TREES	Ash, Green 1/, 3/ <i>Fraxinus pennsylvanica</i>	15-20	25-35/25	20-25	30-40/30	20-30	35-45/30	25-30	40-50/30-40
3	DECIDUOUS TREES	Aspen, Quaking 1/ <i>Populus tremuloides</i>	15-20	30-40	15-20	30-40	15-20	30-40	15-20	30-40
3	DECIDUOUS TREES	Basswood/ Linden, American <i>Tilia americana</i>	15-25	30-40/30	20-30	30-40/30	20-30	35-45/30	25-35	50-70/30-40
3	DECIDUOUS TREES	Birch, Paper 4/ <i>Betula papyrifera</i>	Not Recommended	Not Recommended	20-30 (Niobrara Valley only)	15-25/45	20-30 15-25/45		20-30	15-25/50
3	DECIDUOUS TREES	Birch, River 4/ <i>Betula nigra</i>	Not Recommended	Not Recommended	20-30 (Niobrara Valley only)	15-25/45	20-30	15-25/45	20-30 15-25/50	
3	DECIDUOUS TREES	Boxelder <i>Acer negundo</i>	15-20	25-35/20	15-20	25-35/20	15-20	30-35/20	20-25	35-40/20
3	DECIDUOUS TREES	Catalpa, Northern 1/ <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	25-30	25-30/20	25-30	30-40/20	25-30	40-50/25
3	DECIDUOUS TREES	Cherry, Black <i>Prunus serotina</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	35-40/20	20-30	30-50/20
3	DECIDUOUS TREES	Cottonwood, Eastern 1/ <i>Populus deltoides</i> Recommended cultivars: Might Mo, Noreaster, Platte	30-55	60-80/40	30-55	65-85/40	45-55	65-85/40-50	50-60	70-90/40-60
3	DECIDUOUS TREES	Crabapple 1/ <i>Malus sp.</i> Recommended cultivars: Radiant, Siberian, Midwest, Roselow Sargent	8-12	10-15/15	10-15	10-15/15	10-15	10-15/15	5-20	15-20/15
3	DECIDUOUS TREES	Crabapple, Prairie <i>Malus ionensis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	5-20	15-20/15 5-20		15-20/15
3	DECIDUOUS TREES	Elm, Siberian 1/ <i>Ulmus pumila</i>	15-30	15-35/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
3	DECIDUOUS TREES	Hackberry 1/ <i>Celtis occidentalis</i>	15-20	30-40/20	20-25	40-50/20	20-30	45-55/20	20-30	50-60/30
3	DECIDUOUS TREES	Hawthorn, Cockspur 1/ <i>Crataegus crusgalli</i>	15-20	15-20/15	15-20	15-20/15	15-20	15-20/15	15-20	15-20/15
3	DECIDUOUS TREES	Hawthorn, Washington 1/ <i>Crataegus phaenopyrum</i>	15-20	15-20/15	15-20	15-20/15	15-20	15-20/15	15-20	15-20/15
3	DECIDUOUS TREES	Hickory, Bitternut <i>Carya cordiformis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	45-55/20
3	DECIDUOUS TREES	Hickory, Shagbark <i>Carya ovata</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	45-55/20
3	DECIDUOUS TREES	Honeylocust 1/ <i>Gleditsia triacanthos</i>	15-25	30-40/20	20-30	30-40/20	25-30	35-45/20	25-35	40-50/25-30
3	DECIDUOUS TREES	Hophornbeam, Eastern <i>Ostrya virginiana</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-20	20/10	15-20	20-25/10-20
3	DECIDUOUS TREES	Kentucky Coffeetree <i>Gymnocladus dioicus</i>	Not Recommended	Not Recommended	25-30	30-40/20	25-30	35-40/20	25-30	45-70/25-30
3	DECIDUOUS TREES	Locust, Black 1/, 2/ <i>Robinia pseudoacacia</i>	20-25	25-35/15	25-30	25-35/15	25-30	35-45/20	25-30	40-50/20
3	DECIDUOUS TREES	Maple, Amur <i>Acer ginnala</i> Recommended cultivar: Flame	10-15	10-15/15	10-15	10-15/15	15-20	15-20/15	15-20	15-20/15
3	DECIDUOUS TREES	Maple, Silver <i>Acer saccharinum</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	30-35	40-60/30-40	35-40	50-70/30-50
3	DECIDUOUS TREES	Maple, Sugar <i>Acer saccharum</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	40-50/30
3	DECIDUOUS TREES	Mulberry, Red 1/ <i>Morus rubra</i>	15-20	15-25/15	15-20	30-35/15-20	20-25	35-40/20	20-25	40-45/25-30
3	DECIDUOUS TREES	Mulberry, Russian or White 1/ <i>Morus alba var. tatarica</i>	15-20	15-25/15	15-20	30-35/15-20	15-20	35-40/20	20-25	40-45/25-30
3	DECIDUOUS TREES	Oak, Black <i>Quercus velutina</i>	Not Recommended	Not Recommended	15-20	35-50/20-25	20-25	40-50/30	25-30	40-60/30-40
3	DECIDUOUS TREES	Oak, Bur 1/ <i>Quercus macrocarpa</i>	15-20	25-35/20-25	15-25	30-40/20-30	20-25	45-50/40-50	25-30	60-80/40-60

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
3	DECIDUOUS TREES	Oak, Chinkapin <i>Quercus muhlenbergii</i>	Not Recommended	Not Recommended	15-20	35-50/20-25	20-25	40-50/30	25-30	40-60/30-40
3	DECIDUOUS TREES	Oak, English <i>Quercus robur</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-35	50-60	30-40	55-65
3	DECIDUOUS TREES	Oak, Gambel 1/ <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
3	DECIDUOUS TREES	Oak, Northern Red <i>Quercus rubra</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	40-50/30	25-30	40-60/30-40
3	DECIDUOUS TREES	Oak, Pin <i>Quercus palustris</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	40-60/30-40
3	DECIDUOUS TREES	Oak, Swamp White <i>Quercus bicolor</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-25	30-40/20	20-30	40-50/20-30
3	DECIDUOUS TREES	Oak, White <i>Quercus alba</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	40-50/30	25-30	40-60/30-40
3	DECIDUOUS TREES	Osage-orange 1/ <i>Maclura pomifera</i>	Not Recommended	Not Recommended	15-20	20-25/15	15-20	25-30/15	15-20	30-40/20-25
3	DECIDUOUS TREES	Pawpaw <i>Asimina Adans.</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	15-25/10-20
3	DECIDUOUS TREES	Pear, Chinese (Harbin) <i>Pyrus ussuriensis</i> Recommended cultivar: McDermand	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	15-25/15	20-25	15-25/15
3	DECIDUOUS TREES	Pecan, Northern <i>Carya illinoensis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended		60-70 (South of Platte River only)		70-80 (South of Platte River only)
3	DECIDUOUS TREES	Redbud, Eastern 1/ <i>Cercis canadensis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-20	10-15/10	15-20	15-20/10-20
3	DECIDUOUS TREES	Sycamore, American <i>Platanus occidentalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	30-35	40-45/20	35-40	50-70/30-40
3	DECIDUOUS TREES	Walnut, Black <i>Juglans nigra</i>	20-25	30-40/30	20-25	30-40/30	20-25	40-50/30	25-30	40-60/30
3	DECIDUOUS TREES	Willow, Black 1/ <i>Salix nigra</i>	Not Recommended	Not Recommended	20-25	30-35/20	25-30	30-35/20	25-30	35-50/20
3	DECIDUOUS TREES	Willow, Peachleaf 1/ <i>Salix amygdaloides</i>	Not Recommended	Not Recommended	20-25	20-30/20	20-25	20-30/20	20-25	20-30/20

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
3	DECIDUOUS TREES	Willow, White or Golden 1/ <i>Salix alba</i> (Cultivars Vitellina or Tristis often called Golden Willow)	Not Recommended	Not Recommended	20-25	30-35/20	25-30	30-35/20	25-30	35-40/20
3	DECIDUOUS SHRUBS	Antelope Bitterbrush <i>Purshia tridentate</i>	2-3		5-10		Not Recommended		Not Recommended	
3	DECIDUOUS SHRUBS	Blackhaw, Nannyberry <i>Viburnum lentago</i>	Not Recommended		Not Recommended		6-8		8-12	
3	DECIDUOUS SHRUBS	Buffaloberry, Silver 1/ <i>Shepherdia argentea</i>	5-8		10-12		10-12		10-12	
3	DECIDUOUS SHRUBS	Buttonbush <i>Cephalanthus occidentalis</i>	Not Recommended		Not Recommended		Not Recommended		8-10	
3	DECIDUOUS SHRUBS	Cherry, Nanking <i>Prunus tomentosa</i>	Not Recommended		4-5		4-5		5-7	
3	DECIDUOUS SHRUBS	Chokeberry, Black <i>Aronia melanocarpa</i>	Not Recommended		4-5		4-8		6-8	
3	DECIDUOUS SHRUBS	Chokecherry, Common 1/ <i>Prunus virginiana</i>	5-8		6-12		6-12		8-14	
3	DECIDUOUS SHRUBS	Coralberry <i>Symphoricarpos orbiculatus</i>	Not Recommended		Not Recommended		2-3		2-3	
3	DECIDUOUS SHRUBS	Cotoneaster, Peking <i>Cotoneaster acutifolia</i>	4-5		5-6		5-8		5-10	
3	DECIDUOUS SHRUBS	Cranberry, Highbush <i>Viburnum trilobum</i>	Not Recommended		Not Recommended		6-12		10-12	
3	DECIDUOUS SHRUBS	Currant, Buffalo 1/ <i>Ribes odoratum</i>	3-6		3-6		3-6		3-6	
3	DECIDUOUS SHRUBS	Currant, Golden 1/ <i>Ribes aureum</i>	2-4		2-4		4-6		4-6	
3	DECIDUOUS SHRUBS	Dogwood, Gray <i>Cornus racemosa</i>	4-6		6-8		6-8		6-8	
3	DECIDUOUS SHRUBS	Dogwood, Redosier <i>Cornus sericea</i>	5-6		5-7		6-8		8-10	
3	DECIDUOUS SHRUBS	Elderberry <i>Sambucus canadensis</i>	Not Recommended		4-6		4-6		4-8	

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
3	DECIDUOUS SHRUBS	Euonymus, Winterberry <i>Euonymus bungeanus</i> Recommended cultivar: Pink Lady Winterberry	5-10		5-10		8-14		8-14	
3	DECIDUOUS SHRUBS	Hazelnut, American <i>Corylus americana</i>	Not Recommended		Not Recommended		6-8		6-8	
3	DECIDUOUS SHRUBS	Indigo, False <i>Amorpha fruticosa</i>	Not Recommended		Not Recommended		4-6		8-10	
3	DECIDUOUS SHRUBS	Juneberry (Saskatoon Serviceberry) 1/ <i>Amelanchier alnifolia</i>	5-7		5-7		6-10		6-10	
3	DECIDUOUS SHRUBS	Lilac 1/ <i>Syringa vulgaris</i>	5-6		5-6		5-8		6-10	
3	DECIDUOUS SHRUBS	Mahogany, Mountain 1/ <i>Cercocarpus montana</i>	5-10		5-10		Not Recommended		Not Recommended	
3	DECIDUOUS SHRUBS	Peashrub, Siberian 1/ <i>Caragana arborescens</i>	6-8		6-8		8-10		8-12	
3	DECIDUOUS SHRUBS	Plum, American 1/ <i>Prunus americana</i>	5-7		5-8		5-8		6-10	
3	DECIDUOUS SHRUBS	Rose, Arkansas [prairie rose] <i>Rosa arkansana</i>	1-2		1-2		1-2		1-2	
3	DECIDUOUS SHRUBS	Rose, Hansen Hedge <i>Rosa</i> Sp. <i>Rosa rugosa</i> x <i>R. woodsii</i>	4-6		4-6		4-8		6-8	
3	DECIDUOUS SHRUBS	Rose, Woods' <i>Rosa woodsii</i>	3-5		3-5		4-5		4-5	
3	DECIDUOUS SHRUBS	Sagebrush, Big <i>Artemisia tridentata</i>	3-6		Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	
3	DECIDUOUS SHRUBS	Sagebrush, Silver <i>Artemisia cana</i>	3-6		Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	
3	DECIDUOUS SHRUBS	Saltbush, Fourwing 1/ <i>Atriplex canescens</i>	2-5		Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	
3	DECIDUOUS SHRUBS	Sandcherry, Western <i>Prunus besseyi</i>	2-3		2-3		2-4		3-6	
3	DECIDUOUS SHRUBS	Snowberry, Common <i>Symphoricarpos albus</i>	Not Recommended		Not Recommended		3-4		3-4	

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
3	DECIDUOUS SHRUBS	Snowberry, Western <i>Symphoricarpos occidentalis</i>	3-4		3-4		3-4		3-4	
3	DECIDUOUS SHRUBS	Sumac, Skunkbush 1/ <i>RhusTrilobata</i> Recommended cultivars: Big Horn, Konza Fragrant	3-5		4-6		4-6		4-8	

1/ Adapted to calcareous soils

2/ Black locust can be severely impacted by insect damage; recommend limiting use to wildlife and pollinator plantings, rather than for windbreaks

3/ Green Ash - only to be used in diverse tree and shrub plantings; **not windbreaks**

4/ Conservation mulch improves growth and survival

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4	CONIFEROUS TREES	Arborvitae, American or Northern White Cedar <i>Thuja occidentalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	25-30/20
4	CONIFEROUS TREES	Arborvitae, Oriental <i>Thuja orientalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	15-20/15
4	CONIFEROUS TREES	Baldcypress <i>Taxodium distichum</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-30	40-50/20
4	CONIFEROUS TREES	Fir, Douglas <i>Pseudotsuga menziesii</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	30-35/20	20-30	40-50/20
4	CONIFEROUS TREES	Fir, White <i>Abies concolor</i>	Not Recommended	Not Recommended	20-25	30-40/25	20-25	30-40/25	20-30	40-50/25
4	CONIFEROUS TREES	Juniper, Rocky Mountain <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4	CONIFEROUS TREES	Pine, Austrian <i>Pinus nigra</i>	5-25	30-50/20	15-30	30-50/20	20-30	35-50/20	20-35	40-60/20
4	CONIFEROUS TREES	Pine, Eastern White <i>Pinus strobus</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	30-35	40-60/20
4	CONIFEROUS TREES	Pine, Jack <i>Pinus banksiana</i>	15-20	25-30/15	15-20	30-40/15	20-30	30-40/15	20-30	35-50/15-20
4	CONIFEROUS TREES	Pine, Limber <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-40/15-20	15-20	30-40/15-20	20-25	35-50/15-20
4	CONIFEROUS TREES	Pine, Pinyon [Two needle Pinyon] <i>Pinus edulis</i>	5-10	15-20/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4	CONIFEROUS TREES	Pine, Ponderosa <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-50/20	20-30	35-50/20	20-35	40-60/20
4	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-50/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4	CONIFEROUS TREES	Redcedar, Eastern <i>Juniperus virginiana</i>	10-20	20-25/15	10-20	20-25/15	10-25	25-30/15-20	15-25	30-40/20
4	CONIFEROUS TREES	Spruce, Colorado Blue <i>Picea pungens</i>	15-20	25-30/20	15-20	30-40/20	15-25	30-40/20-30	15-30	40-60/25-30
4	CONIFEROUS TREES	Spruce, Norway <i>Picea abies</i>	Not Recommended	Not Recommended	25-30	30-40/20	25-30	30-40/20	20-30	45-60/25

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4	CONIFEROUS TREES	Spruce, White <i>Picea glauca</i> (variety Black Hills)	15-20	25-30/15	20-25	30-40/20	20-25	30-40/20	20-30	30-40/20
4	DECIDUOUS TREES	Apricot, Manchurian <i>Prunus armeniaca</i>	Not Recommended	Not Recommended	5-10	10-15/10	10-15	10-15/10	10-20	10-20/10
4	DECIDUOUS TREES	Ash, Green 1/ <i>Fraxinus pennsylvanica</i>	Not Recommended	Not Recommended	15-25	30-40/30	20-30 35-40/30		25-30	40-50/30-40
4	DECIDUOUS TREES	Aspen, Quaking <i>Populus tremuloides</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	20-30	15-20	20-30
4	DECIDUOUS TREES	Basswood/ Linden, American <i>Tilia americana</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-30	35-40/30	25-30	50-70/30-40
4	DECIDUOUS TREES	Boxelder <i>Acer negundo</i>	15-20	25-30/20	15-20	25-30/20	15-20	30-35/20	20-25	35-40/20
4	DECIDUOUS TREES	Catalpa, Northern <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	25-30	25-30/20	25-30	30-40/20	25-30	40-50/25
4	DECIDUOUS TREES	Cherry, Black <i>Prunus serotina</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	35-40/20	20-30	30-50/20
4	DECIDUOUS TREES	Cottonwood, Eastern <i>Populus deltoides</i> Recommended cultivars: Might Mo, Noreaster, Platte	30-55	60-80/40	30-55	65-80/40	45-55	65-80/40-50	50-60	70-90/40-50
4	DECIDUOUS TREES	Crabapple <i>Malus sp.</i> Recommended cultivars: Radiant, Siberian, Midwest, Roselow Sargent	5-10	10-15/15	10-15	10-15/15	10-15	10-15/15	15-20	15-20/15
4	DECIDUOUS TREES	Crabapple, Prairie <i>Malus ionensis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	5-15	15-20/15	5-20	15-20/15
4	DECIDUOUS TREES	Elm, Siberian <i>Ulmus pumila</i>	15-30	15-30	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4	DECIDUOUS TREES	Hackberry <i>Celtis occidentalis</i>	15-20	30-40/20	20-25	40-50/20	20-30	45-50/20	20-30	50-60/30
4	DECIDUOUS TREES	Hawthorn, Cockspur <i>Crataegus crusgalli</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	10-15/15	10-20	10-20/15
4	DECIDUOUS TREES	Hawthorn, Washington <i>Crataegus phaenopyrum</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	10-15/15	10-20	10-20/15

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4	DECIDUOUS TREES	Hickory, Bitternut <i>Carya cordiformis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	45-50/20
4	DECIDUOUS TREES	Hickory, Shagbark <i>Carya ovata</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	45-50/20
4	DECIDUOUS TREES	Honeylocust <i>Gleditsia triacanthos</i>	15-25	30-40/20	20-30	30-40/20	25-30	35-40/20	25-35	40-50/25-30
4	DECIDUOUS TREES	Hophornbeam, Eastern <i>Ostrya virginiana</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-20	15-20/10-20	10-20	20-25/10-20
4	DECIDUOUS TREES	Kentucky Coffeetree <i>Gymnocladus dioicus</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	35-40/20	25-30	45-70/25-30
4	DECIDUOUS TREES	Locust, Black 2/ <i>Robinia pseudoacacia</i>	20-25	25-30/15	25-30	25-30/15	25-30	35-40/20	25-30	40-50/20
4	DECIDUOUS TREES	Maple, Amur <i>Acer ginnala</i> Recommended cultivar: Flame	10-15	10-15/15	10-15	10-15/15	15-20	15-20/15	15-20	15-20/15
4	DECIDUOUS TREES	Maple, Sugar <i>Acer saccharum</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	35-430
4	DECIDUOUS TREES	Mulberry, Red <i>Morus rubra</i>	15-20	15-20/15	15-20	30-35/15-20	20-25	35-40/20	20-25	40-45/25-30
4	DECIDUOUS TREES	Mulberry, Russian or White <i>Morus alba var. tatarica</i>	15-20	15-20/15	15-20	30-35/15-20	15-20	35-40/20	20-25	40-40/25-30
4	DECIDUOUS TREES	Oak, Black <i>Quercus velutina</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	40-60/30-40
4	DECIDUOUS TREES	Oak, Bur <i>Quercus macrocarpa</i>	15-20	25-30/15-20	20-25	30-40/20	20-25	35-40/30	20-30	40-60/30-40
4	DECIDUOUS TREES	Oak, Chinkapin <i>Quercus muhlenbergii</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	40-50/30	20-25	40-60/30-40
4	DECIDUOUS TREES	Oak, English <i>Quercus robur</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	30-40	55-65
4	DECIDUOUS TREES	Oak, Gambel <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4	DECIDUOUS TREES	Oak, Northern Red <i>Quercus rubra</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	40-60/30-40

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4	DECIDUOUS TREES	Oak, Swamp White <i>Quercus bicolor</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-30	40-50/20-30
4	DECIDUOUS TREES	Oak, White <i>Quercus alba</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	40-60/30-40
4	DECIDUOUS TREES	Osage-orange <i>Maclura pomifera</i>	Not Recommended	Not Recommended	15-20	20-25/15	15-20	25-30/15	15-20	30-35/20-25
4	DECIDUOUS TREES	Redbud, Eastern <i>Cercis canadensis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	10-15/10	15-20	15-20/10-20
4	DECIDUOUS TREES	Sycamore, American <i>Platanus occidentalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	30-35	40-45/20	30-40	50-70/30-40
4	DECIDUOUS TREES	Walnut, Black <i>Juglans nigra</i>	20-25	30-40/30	20-25	30-40/30	20-25	40-50/30	25-30	40-60/30
4	CONIFEROUS SHRUBS	Juniper, Prostrate <i>Juiperus communis</i>	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15
4	DECIDUOUS SHRUBS	Antelope Bitterbrush <i>Purshia tridentate</i>	2-3		5-10		Not Recommended		Not Recommended	
4	DECIDUOUS SHRUBS	Blackhaw, Nannyberry <i>Viburnum lentago</i>	Not Recommended		Not Recommended		6-8		8-12	
4	DECIDUOUS SHRUBS	Buffaloberry, Silver <i>Shepherdia argentea</i>	5-8		10-12		10-12		10-12	
4	DECIDUOUS SHRUBS	Cherry, Nanking <i>Prunus tomentosa</i>	Not Recommended		4-5		4-5		5-7	
4	DECIDUOUS SHRUBS	Chokeberry, Black <i>Aronia melanocarpa</i>	Not Recommended		5-8		4-8		6-8	
4	DECIDUOUS SHRUBS	Chokecherry, Common <i>Prunus virginiana</i>	5-8		6-12		6-12		8-14	
4	DECIDUOUS SHRUBS	Coralberry <i>Symphoricarpos orbiculatus</i>	Not Recommended		Not Recommended		2-3		2-3	
4	DECIDUOUS SHRUBS	Cotoneaster, Peking <i>Cotoneaster acutifolia</i>	4-5		5-6		5-8		5-10	
4	DECIDUOUS SHRUBS	Cranberry, Highbush <i>Viburnum trilobum</i>	Not Recommended		Not Recommended		6-12		10-12	
4	DECIDUOUS SHRUBS	Currant, Buffalo <i>Ribes odoratum</i>	3-6		3-6		3-6		3-6	

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4	DECIDUOUS SHRUBS	Currant, Golden <i>Ribes aureum</i>	2-4		2-4		4-6		4-6	
4	DECIDUOUS SHRUBS	Dogwood, Gray <i>Cornus racemosa</i>	4-6		6-8		6-8		6-8	
4	DECIDUOUS SHRUBS	Dogwood, Redosier <i>Cornus sericea</i>	5-6		5-7		6-8		8-10	
4	DECIDUOUS SHRUBS	Euonymus, Winterberry <i>Euonymus bungeanus</i> Recommended cultivar: Pink Lady Winterberry	6-10		6-10		8-14		8-14	
4	DECIDUOUS SHRUBS	Hazelnut, American <i>Corylus americana</i>	Not Recommended		Not Recommended		6-8		6-8	
4	DECIDUOUS SHRUBS	Juneberry (Saskatoon Serviceberry) <i>Amelanchier alnifolia</i>	5-7		5-7		6-10		6-10	
4	DECIDUOUS SHRUBS	Lilac <i>Syringa vulgaris</i>	5-6		5-6		5-8		6-10	
4	DECIDUOUS SHRUBS	Mahogany, Mountain <i>Cercocarpus montana</i>	5-10		Not Recommended		Not Recommended		Not Recommended	
4	DECIDUOUS SHRUBS	Peashrub, Siberian <i>Caragana arborescens</i>	6-8		6-8		8-10		8-12	
4	DECIDUOUS SHRUBS	Plum, American <i>Prunus americana</i>	5-7		5-8		5-8		6-10	
4	DECIDUOUS SHRUBS	Rose, Arkansas [prairie rose] <i>Rosa arkansana</i>	1-2		1-2		1-2		1-2	
4	DECIDUOUS SHRUBS	Rose, Hansen Hedge <i>Rosa</i> Sp. <i>Rosa rugosa</i> x <i>R. woodsii</i>	4-6		4-6		4-8		6-8	
4	DECIDUOUS SHRUBS	Rose, Woods' <i>Rosa woodsii</i>	3-5		3-5		4-5		4-5	
4	DECIDUOUS SHRUBS	Sagebrush, Big <i>Artemisia tridentata</i>	3-6		Not Recommended		Not Recommended		Not Recommended	
4	DECIDUOUS SHRUBS	Sagebrush, Silver <i>Artemisia cana</i>	3-6		Not Recommended		Not Recommended		Not Recommended	
4	DECIDUOUS SHRUBS	Saltbush, Fourwing <i>Atriplex canescens</i>	2-5		Not Recommended		Not Recommended		Not Recommended	

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Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4	DECIDUOUS SHRUBS	Sandcherry, Western <i>Prunus besseyi</i>	2-3		2-3		2-4		3-6	
4	DECIDUOUS SHRUBS	Snowberry, Common <i>Symphoricarpos albus</i>	Not Recommended		Not Recommended		3-4		3-4	
4	DECIDUOUS SHRUBS	Snowberry, Western <i>Symphoricarpos occidentalis</i>	3-4		3-4		3-4		3-4	
4	DECIDUOUS SHRUBS	Sumac, Skunkbush <i>Rhus trilobata</i> Recommended cultivars: Big horn, Konza fragrant	3-5		4-6		4-6		4-8	

1/ Green Ash - only to be used in diverse tree and shrub plantings; **not windbreaks**

2/ Black Locust - for wildlife and pollinators (refer to table 11)

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4K	CONIFEROUS TREES	Juniper, Rocky Mountain <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	CONIFEROUS TREES	Pine, Bristlecone <i>Pinus aristata</i>	5-10	25-30/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	CONIFEROUS TREES	Pine, Limber <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-45/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	CONIFEROUS TREES	Pine, Ponderosa <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-55/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-55/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	CONIFEROUS TREES	Redcedar, Eastern <i>Juniperus virginiana</i>	10-20	20-25/15	10-20	20-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	DECIDUOUS TREES	Apricot, Manchurian <i>Prunus armeniaca</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	10-15/10	10-20	10-20/10
4K	DECIDUOUS TREES	Ash, Green 1/ <i>Fraxinus pennsylvanica</i>	Not Recommended	Not Recommended	15-25	30-40/30	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	DECIDUOUS TREES	Catalpa, Northern <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	25-30	25-30/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	DECIDUOUS TREES	Cottonwood, Eastern <i>Populus deltoides</i> Recommended cultivars: Might Mo, Noreaster, Platte	30-55	60-80/40	30-55	65-85/40	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	DECIDUOUS TREES	Elm, Siberian <i>Ulmus pumila</i>	15-30	15-35/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	DECIDUOUS TREES	Hackberry <i>Celtis occidentalis</i>	15-20	30-40/20	20-25	40-50/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	DECIDUOUS TREES	Honeylocust <i>Gleditsia triacanthos</i>	15-25	30-40/20	20-30	30-40/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	DECIDUOUS TREES	Locust, Black 2/ <i>Robinia pseudoacacia</i>	20-25	25-35/15	25-30	25-35/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	DECIDUOUS TREES	Mulberry, Red <i>Morus rubra</i>	15-20	15-25/15	15-20	30-35/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	DECIDUOUS TREES	Mulberry, Russian or White <i>Morus alba var. tatarica</i>	15-20	15-25/15	15-20	30-35/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4K	DECIDUOUS TREES	Oak, Bur <i>Quercus macrocarpa</i>	15-20	25-35/15-20	20-25	30-40/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	DECIDUOUS TREES	Oak, Gambel <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	DECIDUOUS TREES	Osage-orange <i>Maclura pomifera</i>	Not Recommended	Not Recommended	15-20	20-215	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	CONIFEROUS SHRUBS	Juniper, Common (Prostrate) <i>Juiperus communis</i>	4-7	4-7/15	4-7	4-7/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4K	DECIDUOUS SHRUBS	Antelope Bitterbrush <i>Purshia tridentate</i>	2-3		5-10		Not Recommended		Not Recommended	
4K	DECIDUOUS SHRUBS	Buffaloberry, Silver <i>Shepherdia argentea</i>	5-8		10-12		Not Recommended		Not Recommended	
4K	DECIDUOUS SHRUBS	Chokecherry, Common <i>Prunus virginiana</i>	5-8		6-12		Not Recommended		Not Recommended	
4K	DECIDUOUS SHRUBS	Currant, Buffalo <i>Ribes odoratum</i>	3-6		3-6		Not Recommended		Not Recommended	
4K	DECIDUOUS SHRUBS	Currant, Golden <i>Ribes aureum</i>	2-4		2-4		Not Recommended		Not Recommended	
4K	DECIDUOUS SHRUBS	Lilac <i>Syringa vulgaris</i>	5-6		5-6		Not Recommended		Not Recommended	
4K	DECIDUOUS SHRUBS	Mahogany, Mountain <i>Cercocarpus montana</i>	5-10		Not Recommended		Not Recommended		Not Recommended	
4K	DECIDUOUS SHRUBS	Peashrub, Siberian <i>Caragana arborescens</i>	6-8		6-8		Not Recommended		Not Recommended	
4K	DECIDUOUS SHRUBS	Plum, American <i>Prunus americana</i>	5-7		5-8		Not Recommended		Not Recommended	
4K	DECIDUOUS SHRUBS	Saltbush, Fourwing <i>Atriplex canescens</i>	2-5		Not Recommended		Not Recommended		Not Recommended	
4K	DECIDUOUS SHRUBS	Sumac, Skunkbush <i>Rhus trilobata</i> Recommended cultivars: Big horn, Konza fragrant	3-5		4-6		Not Recommended		Not Recommended	

1/ Green Ash - only to be used in diverse tree and shrub plantings; **not windbreaks**

2/ Black Locust - for wildlife and pollinators (refer to table 11)

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4C	CONIFEROUS TREES	Baldcypress <i>Taxodium distichum</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-30	40-50/20
4C	CONIFEROUS TREES	Juniper, Rocky Mountain <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4C	CONIFEROUS TREES	Pine, Austrian <i>Pinus nigra</i>	5-25	30-50/20	15-30	30-50/20	20-30	35-50/20	20-35	40-60/20
4C	CONIFEROUS TREES	Pine, Jack <i>Pinus banksiana</i>	15-20	25-30/15	15-20	30-40/15	20-30	30-40/15	Not Recommended	Not Recommended
4C	CONIFEROUS TREES	Pine, Limber <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-40/15-20	15-20	30-40/15-20	Not Recommended	Not Recommended
4C	CONIFEROUS TREES	Pine, Pinyon [Two needle Pinyon] <i>Pinus edulis</i>	5-10	15-20/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4C	CONIFEROUS TREES	Pine, Ponderosa <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-55/20	20-30	35-55/20	20-35	40-60/20
4C	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-55/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4C	CONIFEROUS TREES	Redcedar, Eastern <i>Juniperus virginiana</i>	10-20	20-25/15	10-20	20-25/15	10-25	25-35/15-20	15-25	30-40/20
4C	CONIFEROUS TREES	Spruce, Colorado Blue <i>Picea pungens</i>	15-20	25-35/20	15-20	30-40/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4C	DECIDUOUS TREES	Apricot, Manchurian <i>Prunus armeniaca</i>	Not Recommended	Not Recommended	5-10	10-15/10	10-15	10-15/10	10-20	10-20/10
4C	DECIDUOUS TREES	Ash, Green 1/ <i>Fraxinus pennsylvanica</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-30 35-40/30		25-30	40-50/30-40
4C	DECIDUOUS TREES	Boxelder <i>Acer negundo</i>	15-20	25-35/20	15-20	25-35/20	15-20	25-35/20	20-25	35-40/20
4C	DECIDUOUS TREES	Catalpa, Northern <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	25-30	25-30/20	25-30	30-40/20	25-30	40-50/25
4C	DECIDUOUS TREES	Cottonwood, Eastern <i>Populus deltoides</i> Recommended cultivars: Might Mo, Noreaster, Platte	30-55	60-80/40	30-55	65-85/40	45-55	65-85/40-50	Not Recommended	Not Recommended

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4C	DECIDUOUS TREES	Crabapple <i>Malus sp.</i> Recommended cultivars: Radiant, Siberian, Midwest, Roselow Sargent	5-10	10-15/15	10-15	10-15/15	10-15	10-15/15	Not Recommended	Not Recommended
4C	DECIDUOUS TREES	Elm, Siberian <i>Ulmus pumila</i>	15-30	15-35/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4C	DECIDUOUS TREES	Hackberry <i>Celtis occidentalis</i>	15-20	30-40/20	20-25	40-50/20	20-30	45-55/20	20-30	50-60/30
4C	DECIDUOUS TREES	Hawthorn, Cockspur <i>Crataegus crusgalli</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	10-15/15	10-20	10-20/15
4C	DECIDUOUS TREES	Hawthorn, Washington <i>Crataegus phaenopyrum</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	10-15/15	10-20	10-20/15
4C	DECIDUOUS TREES	Hickory, Bitternut <i>Carya cordiformis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	45-50/20
4C	DECIDUOUS TREES	Hickory, Shagbark <i>Carya ovata</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	45-50/20
4C	DECIDUOUS TREES	Honeylocust <i>Gleditsia triacanthos</i>	15-25	30-40/20	20-30	30-40/20	25-30	35-40/14420	25-35	40-50/25-30
4C	DECIDUOUS TREES	Hophornbeam, Eastern <i>Ostrya virginiana</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-20	15-20/10-20	10-20	20-25/10-20
4C	DECIDUOUS TREES	Kentucky Coffeetree <i>Gymnocladus dioicus</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	35-45/20	25-30	45-70/25-30
4C	DECIDUOUS TREES	Locust, Black 2/ <i>Robinia pseudoacacia</i>	20-25	25-35/15	25-30	25-35/15	25-30	35-45/20	25-30	40-50/20
4C	DECIDUOUS TREES	Mulberry, Red <i>Morus rubra</i>	15-20	15-25/15	15-20	30-35/15-20	20-25	35-40/20	20-25	40-45/25-30
4C	DECIDUOUS TREES	Mulberry, Russian or White <i>Morus alba var. tatarica</i>	15-20	15-25/15	15-20	30-35/15-20	15-20	35-40/20	20-25	40-45/25-30
4C	DECIDUOUS TREES	Oak, Black <i>Quercus velutina</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	40-60/30-40
4C	DECIDUOUS TREES	Oak, Bur <i>Quercus macrocarpa</i>	15-20	25-35/15-20	20-25	30-40/20	20-25	35-430	20-30	40-60/30-40

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4C	DECIDUOUS TREES	Oak, Chinkapin <i>Quercus muhlenbergii</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	40-50/30	20-25	40-60/30-40
4C	DECIDUOUS TREES	Oak, Gambel <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4C	DECIDUOUS TREES	Oak, Northern Red <i>Quercus rubra</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	40-60/30-40
4C	DECIDUOUS TREES	Oak, Swamp White <i>Quercus bicolor</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-30	40-50/20-30
4C	DECIDUOUS TREES	Osage-orange <i>Maclura pomifera</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	25-30/15	15-20	30-320-25
4C	CONIFEROUS SHRUBS	Juniper, Common (Prostrate) <i>Juiperus communis</i>	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15
4C	DECIDUOUS SHRUBS	Antelope Bitterbrush <i>Purshia tridentate</i>	2-3		5-10		Not Recommended		Not Recommended	
4C	DECIDUOUS SHRUBS	Blackhaw, Nannyberry <i>Vibernum lentago</i>	Not Recommended		v		6-8		8-12	
4C	DECIDUOUS SHRUBS	Buffaloberry, Silver <i>Shepherdia argentea</i>	5-8		10-12		10-12		10-12	
4C	DECIDUOUS SHRUBS	Cherry, Nanking <i>Prunus tomentosa</i>	Not Recommended		4-5		4-5		5-7	
4C	DECIDUOUS SHRUBS	Chokeberry, Black <i>Aronia melanocarpa</i>	Not Recommended		5-8		4-8		6-8	
4C	DECIDUOUS SHRUBS	Chokecherry, Common <i>Prunus virginiana</i>	5-8		6-12		6-12		8-14	
4C	DECIDUOUS SHRUBS	Coralberry <i>Symphoricarpos orbiculatus</i>	Not Recommended		Not Recommended		2-3		2-3	
4C	DECIDUOUS SHRUBS	Cotoneaster, Peking <i>Cotoneaster acutifolia</i>	4-5		5-6		5-8		5-10	
4C	DECIDUOUS SHRUBS	Cranberry, Highbush <i>Viburnum trilobum</i>	Not Recommended		Not Recommended		6-12		10-12	
4C	DECIDUOUS SHRUBS	Currant, Buffalo <i>Ribes odoratum</i>	3-6		3-6		3-6		3-6	

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4C	DECIDUOUS SHRUBS	Currant, Golden <i>Ribes aureum</i>	2-4		2-4		4-6		4-6	
4C	DECIDUOUS SHRUBS	Dogwood, Gray <i>Cornus racemosa</i>	4-6		6-8		6-8		6-8	
4C	DECIDUOUS SHRUBS	Dogwood, Redosier <i>Cornus sericea</i>	5-6		5-7		6-8		8-10	
4C	DECIDUOUS SHRUBS	Euonymus, Winterberry <i>Euonymus alatus</i> Recommended cultivar: Pink Lady Winterberry	6-10		6-10		8-14		8-14	
4C	DECIDUOUS SHRUBS	Hazelnut, American <i>Corylus americana</i>	Not Recommended		Not Recommended		Not Recommended		6-8	
4C	DECIDUOUS SHRUBS	Juneberry (Saskatoon Serviceberry) <i>Amelanchier alnifolia</i>	5-7		5-7		6-10		6-10	
4C	DECIDUOUS SHRUBS	Lilac <i>Syringa vulgaris</i>	5-6		5-6		5-8		6-10	
4C	DECIDUOUS SHRUBS	Mahogany, Mountain <i>Cercocarpus montana</i>	5-10		5-10		Not Recommended		Not Recommended	
4C	DECIDUOUS SHRUBS	Peashrub, Siberian <i>Caragana arborescens</i>	6-8		6-8		8-10		8-10	
4C	DECIDUOUS SHRUBS	Plum, American <i>Prunus americana</i>	5-7		5-8		5-8		6-10	
4C	DECIDUOUS SHRUBS	Rose, Arkansas [prairie rose] <i>Rosa arkansana</i>	1-2		1-2		1-2		1-2	
4C	DECIDUOUS SHRUBS	Rose, Hansen Hedge <i>Rosa</i> Sp. <i>Rosa rugosa x R. woodsii</i>	4-6		4-6		4-8		6-8	
4C	DECIDUOUS SHRUBS	Rose, Woods' <i>Rosa woodsii</i>	3-5		3-5		4-5		4-5	
4C	DECIDUOUS SHRUBS	Sagebrush, Big <i>Artemisia tridentata</i>	3-6		Not Recommended		Not Recommended		Not Recommended	
4C	DECIDUOUS SHRUBS	Sagebrush, Silver <i>Artemisia cana</i>	3-6		Not Recommended		Not Recommended		Not Recommended	

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4C	DECIDUOUS SHRUBS	Saltbush, Fourwing <i>Atriplex canescens</i>	2-5		Not Recommended		Not Recommended		Not Recommended	
4C	DECIDUOUS SHRUBS	Snowberry, Common <i>Symphoricarpos albus</i>	Not Recommended		Not Recommended		3-4		3-4	
4C	DECIDUOUS SHRUBS	Snowberry, Western <i>Symphoricarpos occidentalis</i>	3-4		3-4		3-4		3-4	
4C	DECIDUOUS SHRUBS	Sumac, Skunkbush <i>Rhus trilobata</i> Recommended cultivars: Big horn, Konza fragrant	3-5		4-6		4-6		4-8	

1/ Green Ash - only to be used in diverse tree and shrub plantings; **not windbreaks**

2/ Black Locust - for wildlife and pollinators (refer to table 11)

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4CK	CONIFEROUS TREES	Juniper, Rocky Mountain <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	CONIFEROUS TREES	Pine, Bristlecone <i>Pinus aristata</i>	5-10	25-30/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	CONIFEROUS TREES	Pine, Limber <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-40/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	CONIFEROUS TREES	Pine, Ponderosa <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-50/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-50/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	CONIFEROUS TREES	Redcedar, Eastern <i>Juniperus virginiana</i>	10-20	20-215	10-20	20-215	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS TREES	Apricot, Manchurian <i>Prunus armeniaca</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	10-15/10	10-20	10-20/10
4CK	DECIDUOUS TREES	Ash, Green 1/ <i>Fraxinus pennsylvanica</i>	15-20	25-30/25	15-25	30-40/30	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS TREES	Catalpa, Northern <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	30-35/20	15-20	30-35/20
4CK	DECIDUOUS TREES	Cottonwood, Eastern <i>Populus deltoides</i> Recommended cultivars: Might Mo, Noreaster, Platte	30-55	60-80/40	30-55	65-80/40	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS TREES	Crabapple Malus sp. Recommended cultivars: Radiant, Siberian, Midwest, Roselow Sargent	5-10	10-115	10-15	10-115	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS TREES	Elm, Siberian <i>Ulmus pumila</i>	15-30	15-320	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS TREES	Hackberry <i>Celtis occidentalis</i>	15-20	30-40/20	20-25	40-50/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS TREES	Honeylocust <i>Gleditsia triacanthos</i>	15-25	30-40/20	20-30	30-40/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS TREES	Locust, Black 2/ <i>Robinia pseudoacacia</i>	20-25	25-30/15	25-30	25-30/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS TREES	Mulberry, Red <i>Morus rubra</i>	15-20	15-20/15	15-20	30-35/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended

Soils Group	Tree/Shrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
4CK	DECIDUOUS TREES	Mulberry, Russian or White <i>Morus alba var. tatarica</i>	15-20	15-20/15	15-20	30-35/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS TREES	Oak, Bur <i>Quercus macrocarpa</i>	15-20	25-30/15-20	20-25	30-40/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS TREES	Oak, Gambel <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS TREES	Osage-orange <i>Maclura pomifera</i>	Not Recommended	Not Recommended	15-20	20-25/G4115	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	CONIFEROUS SHRUBS	Juniper, Common (Prostrate) <i>Juiperus communis</i>	4-7	4-7/15	4-7	4-7/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS SHRUBS	Antelope Bitterbrush <i>Purshia tridentate</i>	2-3		Not Recommended		Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS SHRUBS	Buffaloberry, Silver <i>Shepherdia argentea</i>	5-8		10-12		Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS SHRUBS	Chokecherry, Common <i>Prunus virginiana</i>	5-8		6-12		Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS SHRUBS	Currant, Buffalo <i>Ribes odoratum</i>	3-6		3-6		Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS SHRUBS	Currant, Golden <i>Ribes aureum</i>	2-4		2-4		Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS SHRUBS	Lilac <i>Syringa vulgaris</i>	5-6		5-6		Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS SHRUBS	Mahogany, Mountain <i>Cercocarpus montana</i>	5-10		Not Recommended		Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS SHRUBS	Peashrub, Siberian <i>Caragana arborescens</i>	6-8		6-8		Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS SHRUBS	Plum, American <i>Prunus americana</i>	5-7		5-8		Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS SHRUBS	Saltbush, Fourwing <i>Atriplex canescens</i>	2-5		Not Recommended		Not Recommended	Not Recommended	Not Recommended	Not Recommended
4CK	DECIDUOUS SHRUBS	Sumac, Skunkbush <i>Rhus trilobata</i> Recommended cultivars: Big horn, Konza fragrant	3-5		4-6		Not Recommended	Not Recommended	Not Recommended	Not Recommended

1/ Green Ash - only to be used in diverse tree and shrub plantings; **not windbreaks**

2/ Black Locust - for wildlife and pollinators (refer to table 11)

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
5	CONIFEROUS TREES	Arborvitae, American or Northern White Cedar <i>Thuja occidentalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	25-30/20
5	CONIFEROUS TREES	Arborvitae, Oriental 1/ <i>Thuja orientalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	15-20/15
5	CONIFEROUS TREES	Juniper, Rocky Mountain 1/ <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
5	CONIFEROUS TREES	Pine, Austrian <i>Pinus nigra</i>	5-25	30-50/20	15-30	30-55/20	20-30	35-50/20	20-35	40-60/20
5	CONIFEROUS TREES	Pine, Eastern White <i>Pinus strobus</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	40-50/20	30-35	40-60/20
5	CONIFEROUS TREES	Pine, Jack <i>Pinus banksiana</i>	15-20	25-35/15	15-20	30-40/15	15-30	30-40/15	20-30	40-45/15
5	CONIFEROUS TREES	Pine, Limber 1/ <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-45/15-20	15-20	30-45/15-20	20-25	35-55/15-20
5	CONIFEROUS TREES	Pine, Pinyon [Two needle Pinyon] <i>Pinus edulis</i>	5-10	15-20/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
5	CONIFEROUS TREES	Pine, Ponderosa 1/ <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-55/20	20-30	35-55/20	20-35	40-60/20
5	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-55/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
5	CONIFEROUS TREES	Redcedar, Eastern 1/ <i>Juniperus virginiana</i>	10-20	20-25/15	10-20	20-25/15	10-25	25-30/15-20	15-25	30-40/20
5	CONIFEROUS TREES	Spruce, Colorado Blue <i>Picea pungens</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	30-45/20-25	20-30	40-60/25
5	CONIFEROUS TREES	Spruce, Norway <i>Picea abies</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	30-45/20	25-30	45-60/25
5	CONIFEROUS TREES	Spruce, White <i>Picea glauca</i> (variety Black Hills)	15-20	25-35/15	20-25	30-40/20	20-25	30-45/20	25-30	30-45/20
5	DECIDUOUS TREES	Apricot, Manchurian <i>Prunus armeniaca</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	10-15/10	10-20	10-20/10
5	DECIDUOUS TREES	Ash, Green 1/, 3/ <i>Fraxinus pennsylvanica</i>	15-20	25-35/25	20-25	30-40/30	20-30	35-45/30	25-30	40-50/30-40
5	DECIDUOUS TREES	Basswood/ Linden, American <i>Tilia americana</i>	20-25	30-40/30	25-30	30-40/30	25-30	35-45/30	25-30	40-50/30-40
5	DECIDUOUS TREES	Boxelder <i>Acer negundo</i>	15-20	25-35/20	15-20	25-35/20	20-25	30-35/20	20-25	35-40/20
5	DECIDUOUS TREES	Catalpa, Northern 1/ <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	25-30	25-30/20	25-30	30-40/20	25-30	40-50/25

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
5	DECIDUOUS TREES	Crabapple 1/ <i>Malus sp.</i> Recommended cultivars: Radiant, Siberian, Midwest, Roselow Sargent	10-15	10-15/15	10-15	10-15/15	10-15	10-15/15	15-20	15-20/15
5	DECIDUOUS TREES	Elm, Siberian <i>Ulmus pumila</i>	20-25	20-30/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
5	DECIDUOUS TREES	Hackberry 1/ <i>Celtis occidentalis</i>	15-20	30-40/20	20-25	40-50/20	20-30	45-50/20	20-30	50-60/30
5	DECIDUOUS TREES	Hawthorn, Cockspur 1/ <i>Crataegus crusgalli</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	15-20/15	15-20	15-20/15
5	DECIDUOUS TREES	Hawthorn, Washington 1/ <i>Crataegus phaenopyrum</i>	Not Recommended	Not Recommended	10-15	15-20/15	10-15	15-20/15	15-20	15-20/15
5	DECIDUOUS TREES	Hickory, Bitternut <i>Carya cordiformis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	45-55/20
5	DECIDUOUS TREES	Hickory, Shagbark <i>Carya ovata</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	45-55/20
5	DECIDUOUS TREES	Honeylocust 1/ <i>Gleditsia triacanthos</i>	15-25	30-40/20	20-30	30-40/20	25-30	35-420	25-35	40-50/25-30
5	DECIDUOUS TREES	Kentucky Coffeetree <i>Gymnocladus dioicus</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	35-45/20	25-30	45-70/25-30
5	DECIDUOUS TREES	Locust, Black 1/, 2/ <i>Robinia pseudoacacia</i>	20-25	25-30/15	25-30	25-35/15	25-30	35-45/20	25-30	40-50/20
5	DECIDUOUS TREES	Maple, Amur <i>Acer ginnala</i> Recommended cultivar: Flame	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	15-20/15	15-20	15-20/15
5	DECIDUOUS TREES	Maple, Silver <i>Acer saccharinum</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	30-35	40-60/30-40	35-40	50-70/30-50
5	DECIDUOUS TREES	Maple, Sugar <i>Acer saccharum</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	40-50/30
5	DECIDUOUS TREES	Mulberry, Red 1/ <i>Morus rubra</i>	15-20	15-20/15	15-20	30-35/15-20	20-25	35-40/20	20-25	40-45/25-30
5	DECIDUOUS TREES	Mulberry, Russian or White 1/ <i>Morus alba var. tatarica</i>	15-20	15-20/15	15-20	30-35/15-20	15-20	35-40/20	20-25	40-45/25-30
5	DECIDUOUS TREES	Oak, Black <i>Quercus velutina</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	40-60/30-40
5	DECIDUOUS TREES	Oak, Bur 1/ <i>Quercus macrocarpa</i>	15-20	25-30/15-20	20-25	30-40/20	20-25	35-40/30	25-30	40-60/30-40
5	DECIDUOUS TREES	Oak, English <i>Quercus robur</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	30-40	55-65
5	DECIDUOUS TREES	Oak, Gambel 1/ <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
5	DECIDUOUS TREES	Oak, Northern Red <i>Quercus rubra</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	40-60/30-40

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
5	DECIDUOUS TREES	Oak, White <i>Quercus alba</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	40-60/30-40
5	DECIDUOUS TREES	Osage-orange 1/ <i>Maclura pomifera</i>	Not Recommended	Not Recommended	15-20	20-25/15	15-20	25-30/15	15-20	25-30/15
5	DECIDUOUS TREES	Pear, Chinese (Harbin) <i>Pyrus ussuriensis</i> Recommended cultivar: McDermand	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	15-25/15	20-25	20-25/15
5	DECIDUOUS TREES	Sycamore, American <i>Platanus occidentalis</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	35-40	50-70/30-40
5	CONIFEROUS SHRUBS	Juniper, Common (Prostrate) <i>Juiperus communis</i>	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15
5	DECIDUOUS SHRUBS	Antelope Bitterbrush <i>Purshia tridentate</i>	2-3		Not Recommended		Not Recommended		Not Recommended	
5	DECIDUOUS SHRUBS	Blackhaw, Nannyberry 1/ <i>Vibernum lentago</i>	Not Recommended		Not Recommended		6-8		8-12	
5	DECIDUOUS SHRUBS	Buffaloberry, Silver 1/ <i>Shepherdia argentea</i>	5-8		10-12		10-12		10-12	
5	DECIDUOUS SHRUBS	Buttonbush <i>Cephalanthus occidentalis</i>	Not Recommended		Not Recommended		Not Recommended		8-10	
5	DECIDUOUS SHRUBS	Cherry, Nanking <i>Prunus tomentosa</i>	Not Recommended		Not Recommended		4-5		5-7	
5	DECIDUOUS SHRUBS	Chokeberry, Black <i>Aronia melanocarpa</i>	Not Recommended		5-8		5-8		5-8	
5	DECIDUOUS SHRUBS	Chokecherry, Common 1/ <i>Prunus virginiana</i>	5-8		6-12		6-12		8-14	
5	DECIDUOUS SHRUBS	Coralberry <i>Symphoricarpos orbiculatus</i>	Not Recommended		Not Recommended		2-3		2-3	
5	DECIDUOUS SHRUBS	Cotoneaster, Peking <i>Cotoneaster acutifolia</i>	4-5		5-6		5-8		5-10	
5	DECIDUOUS SHRUBS	Cranberry, Highbush <i>Viburnum trilobum</i>	Not Recommended		Not Recommended		6-8		6-10	
5	DECIDUOUS SHRUBS	Currant, Buffalo 1/ <i>Ribes odoratum</i>	3-6		3-6		3-6		3-6	
5	DECIDUOUS SHRUBS	Currant, Golden 1/ <i>Ribes aureum</i>	2-4		2-4		4-6		4-6	
5	DECIDUOUS SHRUBS	Dogwood, Gray <i>Cornus racemosa</i>	Not Recommended		6-8		6-8		6-8	
5	DECIDUOUS SHRUBS	Dogwood, Redosier <i>Cornus sericea</i>	5-6		5-7		6-8		8-10	
5	DECIDUOUS SHRUBS	Elderberry <i>Sambucus canadensis</i>	Not Recommended		4-6		4-6		4-8	

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
5	DECIDUOUS SHRUBS	Euonymus, Winterberry <i>Euonymus alatus</i> Recommended cultivar: Pink Lady Winterberry	5-10		5-10		8-14		8-14	
5	DECIDUOUS SHRUBS	Juneberry (Saskatoon Serviceberry) 1/ <i>Amelanchier alnifolia</i>	5-7		5-7		6-10		6-10	
5	DECIDUOUS SHRUBS	Lilac 1/ <i>Syringa vulgaris</i>	5-6		5-6		5-8		6-10	
5	DECIDUOUS SHRUBS	Mahogany, Mountain 1/ <i>Cercocarpus montana</i>	5-10		Not Recommended		Not Recommended		Not Recommended	
5	DECIDUOUS SHRUBS	Peashrub, Siberian 1/ <i>Caragana arborescens</i>	6-8		6-8		6-10		8-10	
5	DECIDUOUS SHRUBS	Plum, American 1/ <i>Prunus americana</i>	5-7		5-8		5-8		6-10	
5	DECIDUOUS SHRUBS	Rose, Arkansas (Prairie Rose) <i>Rosa arkansana</i>	1-2		1-2		1-2		1-2	
5	DECIDUOUS SHRUBS	Rose, Hansen Hedge Rosa Sp. <i>Rosa rugosa x R. woodsii</i>	4-6		4-6		4-8		6-8	
5	DECIDUOUS SHRUBS	Rose, Woods <i>Rosa woodsii</i>	3-5		3-5		4-5		4-5	
5	DECIDUOUS SHRUBS	Sagebrush, Big <i>Artemisia tridentata</i>	3-6		Not Recommended		Not Recommended		Not Recommended	
5	DECIDUOUS SHRUBS	Sagebrush, Silver <i>Artemisia cana</i>	3-6		Not Recommended		Not Recommended		Not Recommended	
5	DECIDUOUS SHRUBS	Saltbush, Fourwing <i>Atriplex canescens</i>	2-5		Not Recommended		Not Recommended		Not Recommended	
5	DECIDUOUS SHRUBS	Sandcherry, Western <i>Prunus besseyi</i>	2-3		2-3		2-4		3-6	
5	DECIDUOUS SHRUBS	Snowberry, Common <i>Symphoricarpos albus</i>	Not Recommended		Not Recommended		3-4		3-4	
5	DECIDUOUS SHRUBS	Snowberry, Western <i>Symphoricarpos occidentalis</i>	3-4		3-4		3-4		3-4	
5	DECIDUOUS SHRUBS	Sumac, Skunkbush 1/ <i>Rhus trilobata</i> Recommended cultivars: Big Horn, Konza Fragrant	3-5		4-6		4-6		4-8	

1/ Adapted to calcareous soils

2/ Black locust can be severely impacted by insect damage; recommend limiting use to wildlife and pollinator plantings, rather than for windbreaks

3/ Green Ash - only to be used in diverse tree and shrub plantings; not windbreaks

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			0-YEAR	MATURE	0-YEAR	MATURE	0-YEAR	MATURE	0-YEAR	MATURE
			HEIGHT (ft)	HGTSPREAD (ft)	HEIGHT (ft)	HGTSPREAD (ft)	HEIGHT (ft)	HGTSPREAD (ft)	HEIGHT (ft)	HGTSPREAD (ft)
5K	CONIFEROUS TREES	Juniper, Rocky Mountain 1/ <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
5K	CONIFEROUS TREES	Pine, Limber 1/ <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-45/15-20	15-20	30-45/15-20	20-25	35-55/15-20
5K	CONIFEROUS TREES	Pine, Ponderosa 1/ <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-45/20	20-30	35-520	20-35	40-60/20
5K	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-55/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
5K	CONIFEROUS TREES	Redcedar, Eastern <i>Juniperus virginiana</i>	10-20	20-25/15	10-20	20-25/15	10-25	25-35/15-20	15-25	30-40/20
5K	DECIDUOUS TREES	Apricot, Manchurian <i>Prunus armeniaca</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	10-15/10	10-20	10-20/10
5K	DECIDUOUS TREES	Ash, Green 1/, 2/ <i>Fraxinus pennsylvanica</i>	10-15	20-25/20	10-15	20-25/20	10-15	20-25/20	10-15	
5K	DECIDUOUS TREES	Aspen, Quaking 1/ <i>Populus tremuloides</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	30-40	15-20	30-40
5K	DECIDUOUS TREES	Catalpa, Northern 1/ <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-30	30-40/20	25-30	
5K	DECIDUOUS TREES	Crabapple 1/ <i>Malus sp.</i> Recommended cultivars: Radiant, Siberian, Midwest, Roselow Sargent	10-15	10-15/15	10-15	10-15/15	10-15	10-15/15	15-20	15-20/15
5K	DECIDUOUS TREES	Elm, Siberian 1/ <i>Ulmus pumila</i>	15-20	30-35/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
5K	DECIDUOUS TREES	Hackberry 1/ <i>Celtis occidentalis</i>	10-15	25-30/20	20-25	40-50/20	10-15	25-30/20	10-15	30-35/30
5K	DECIDUOUS TREES	Hawthorn, Cockspur 1/ <i>Crataegus crusgalli</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	15-20/15	15-20	15-20/15
5K	DECIDUOUS TREES	Hawthorn, Washington 1/ <i>Crataegus phaenopyrum</i>	Not Recommended	Not Recommended	10-15	15-20/15	10-15	15-20/15	15-20	15-20/15
5K	DECIDUOUS TREES	Honeylocust 1/ <i>Gleditsia triacanthos</i>	Not Recommended	Not Recommended	20-30	30-40/20	20-30	30-40/20	25-35	40-50/25-30
5K	DECIDUOUS TREES	Locust, Black 1/, 3/ <i>Robinia pseudoacacia</i>	20-25	25-35/15	25-30	25-315	25-30	35-45/20	25-30	40-50/20

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			0-YEAR	MATURE	0-YEAR	MATURE	0-YEAR	MATURE	0-YEAR	MATURE
			HEIGHT (ft)	HGTSPREAD (ft)	HEIGHT (ft)	HGTSPREAD (ft)	HEIGHT (ft)	HGTSPREAD (ft)	HEIGHT (ft)	HGTSPREAD (ft)
5K	DECIDUOUS TREES	Mulberry, Red 1/ <i>Morus rubra</i>	15-20	15-215	15-20	30-35/15-20	20-25	35-40/20	20-25	40-425-30
5K	DECIDUOUS TREES	Mulberry, Russian or White 1/ <i>Morus alba var. tatarica</i>	15-20	15-215	15-20	30-35/15-20	15-20	35-40/20	20-25	40-425-30
5K	DECIDUOUS TREES	Oak, Bur 1/ <i>Quercus macrocarpa</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
5K	DECIDUOUS TREES	Oak, Gambel 1/ <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
5K	DECIDUOUS TREES	Osage-orange 1/ <i>Maclura pomifera</i>	Not Recommended	Not Recommended	15-20	20-25/15	15-20	25-30/15	15-20	30-35/20-25
5K	CONIFEROUS SHRUBS	Juniper, Common (Prostrate) <i>Juiperus communis</i>	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15
5K	DECIDUOUS SHRUBS	Antelope Bitterbrush 1/ <i>Purshia tridentate</i>	2-3		Not Recommended		Not Recommended		Not Recommended	
5K	DECIDUOUS SHRUBS	Blackhaw, Nannyberry 1/ <i>Vibenum lentago</i>	Not Recommended		Not Recommended		6-8		8-12	
5K	DECIDUOUS SHRUBS	Buffaloberry, Silver 1/ <i>Shepherdia argentea</i>	5-8		10-12		10-12		10-12	
5K	DECIDUOUS SHRUBS	Chokecherry, Common 1/ <i>Prunus virginiana</i>	5-8		5-8		6-12		8-14	
5K	DECIDUOUS SHRUBS	Currant, Buffalo 1/ <i>Ribes odoratum</i>	2-4		3-6		3-6		3-6	
5K	DECIDUOUS SHRUBS	Currant, Golden 1/ <i>Ribes aureum</i>	2-4		2-4		4-6		4-6	
5K	DECIDUOUS SHRUBS	Juneberry (Saskatoon Serviceberry) 1/ <i>Amelanchier alnifolia</i>	5-7		5-7		6-10		6-10	
5K	DECIDUOUS SHRUBS	Lilac 1/ <i>Syringa vulgaris</i>	5-6		5-6		5-8		6-10	
5K	DECIDUOUS SHRUBS	Peashrub, Siberian 1/ <i>Caragana arborescens</i>	6-8		6-8		8-10		8-10	
5K	DECIDUOUS SHRUBS	Plum, American 1/ <i>Prunus americana</i>	5-7		5-8		5-8		6-10	

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			0-YEAR	MATURE	0-YEAR	MATURE	0-YEAR	MATURE	0-YEAR	MATURE
			HEIGHT (ft)	HGTSPREAD (ft)	HEIGHT (ft)	HGTSPREAD (ft)	HEIGHT (ft)	HGTSPREAD (ft)	HEIGHT (ft)	HGTSPREAD (ft)
5K	DECIDUOUS SHRUBS	Saltbush, Fourwing 1/ <i>Atriplex canescens</i>	2-5		Not Recommended		Not Recommended		Not Recommended	
5K	DECIDUOUS SHRUBS	Sumac, Skunkbush 1/ <i>Rhus trilobata</i> Recommended cultivars: Big Horn, Konza Fragrant	3-5		4-6		4-6		4-8	

1/ Adapted to calcareous soils

2/ Green Ash - only to be used in diverse tree and shrub plantings; **not windbreaks**

3/ Black Locust - for wildlife and pollinators (refer to table 11)

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
6	CONIFEROUS TREES	Juniper, Rocky Mountain <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6	CONIFEROUS TREES	Pine, Austrian <i>Pinus nigra</i>	10-15	20-25/20	15-20	20-25/20	15-20	25-35/20	20-25	30-40/20
6	CONIFEROUS TREES	Pine, Jack <i>Pinus banksiana</i>	10-15	20-25/15	10-15	20-25/15	15-25	25-30/15	15-25	25-30/15
6	CONIFEROUS TREES	Pine, Limber <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-45/15-20	15-20	30-45/15-20	20-25	35-55/15-20
6	CONIFEROUS TREES	Pine, Pinyon [Two needle Pinyon] <i>Pinus edulis</i>	5-10	15-20/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6	CONIFEROUS TREES	Pine, Ponderosa <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-55/20	20-30	35-55/20	20-35	40-60/20
6	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-55/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6	CONIFEROUS TREES	Redcedar, Eastern <i>Juniperus virginiana</i>	10-20	20-25/15	10-20	20-25/15	10-25	25-35/15-20	15-25	30-40/20
6	DECIDUOUS TREES	Catalpa, Northern <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	30-35/20	15-20	30-35/20
6	DECIDUOUS TREES	Elm, Siberian <i>Ulmus pumila</i>	15-30	15-35/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6	DECIDUOUS TREES	Hackberry <i>Celtis occidentalis</i>	15-20	30-40/20	20-25	40-50/20	20-30	45-55/20	20-30	50-60/30
6	DECIDUOUS TREES	Honeylocust <i>Gleditsia triacanthos</i>	15-25	30-40/20	20-30	30-40/20	25-30	35-45/20	25-35	40-50/25-30
6	DECIDUOUS TREES	Locust, Black 2/ <i>Robinia pseudoacacia</i>	20-25	25-35/15	25-30	25-35/15	25-30	35-45/20	25-30	40-50/20
6	DECIDUOUS TREES	Mulberry, Red <i>Morus rubra</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	20-25/15	10-15	20-25/15
6	DECIDUOUS TREES	Mulberry, Russian or White <i>Morus alba var. tatarica</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	20-25/15	10-15	20-25/15
6	DECIDUOUS TREES	Oak, Bur <i>Quercus macrocarpa</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	20-25/15	10-15	20-25/15
6	DECIDUOUS TREES	Oak, Gambel <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
6	DECIDUOUS TREES	Osage-orange <i>Maclura pomifera</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	20-30/15	15-20	30-35/20-25
6	CONIFEROUS SHRUBS	Juniper, Common (Prostrate) <i>Juiperus communis</i>	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15
6	DECIDUOUS SHRUBS	Antelope Bitterbrush <i>Purshia tridentate</i>	2-3		2-3		Not Recommended		Not Recommended	
6	DECIDUOUS SHRUBS	Buffaloberry, Silver <i>Shepherdia argentea</i>	5-8		10-12		10-12		10-12	
6	DECIDUOUS SHRUBS	Chokecherry, Common <i>Prunus virginiana</i>	5-8		6-12		6-12		8-14	
6	DECIDUOUS SHRUBS	Coralberry <i>Symphoricarpos orbiculatus</i>	Not Recommended		Not Recommended		2-3		2-3	
6	DECIDUOUS SHRUBS	Cotoneaster, Peking <i>Cotoneaster acutifolia</i>	4-5		5-6		5-8		5-10	
6	DECIDUOUS SHRUBS	Currant, Buffalo <i>Ribes odoratum</i>	3-6		3-6		3-6		3-6	
6	DECIDUOUS SHRUBS	Currant, Golden <i>Ribes aureum</i>	2-4		2-4		4-6		4-6	
6	DECIDUOUS SHRUBS	Peashrub, Siberian <i>Caragana arborescens</i>	6-8		6-8		6-10		8-10	
6	DECIDUOUS SHRUBS	Rose, Arkansas [prairie rose] <i>Rosa arkansana</i>	1-2		1-2		1-2		1-2	
6	DECIDUOUS SHRUBS	Rose, Hansen Hedge <i>Rosa</i> Sp. <i>Rosa rugosa</i> x <i>R. woodsii</i>	4-6		4-6		4-8		6-8	
6	DECIDUOUS SHRUBS	Rose, Woods' <i>Rosa woodsii</i>	3-5		3-5		4-5		4-5	
6	DECIDUOUS SHRUBS	Sagebrush, Silver <i>Artemisia cana</i>	3-6		Not Recommended		Not Recommended		Not Recommended	
6	DECIDUOUS SHRUBS	Saltbush, Fourwing <i>Atriplex canescens</i>	2-5		Not Recommended		Not Recommended		Not Recommended	
6	DECIDUOUS SHRUBS	Sandcherry, Western <i>Prunus besseyi</i>	2-3		2-3		2-4		3-6	

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
6	DECIDUOUS SHRUBS	Snowberry, Common <i>Symphoricarpos albus</i>	Not Recommended		Not Recommended		2-3		2-3	
6	DECIDUOUS SHRUBS	Snowberry, Western <i>Symphoricarpos occidentalis</i>	2-3		2-3		2-3		2-3	
6	DECIDUOUS SHRUBS	Sumac, Skunkbush <i>Rhus trilobata</i> Recommended cultivars: Big horn, Konza fragrant	3-5		4-6		4-6		4-8	

1/ Green Ash - only to be used in diverse tree and shrub plantings; **not windbreaks**

2/ Black Locust - for wildlife and pollinators (refer to table 11)

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
6K	CONIFEROUS TREES	Juniper, Rocky Mountain <i>Juniperus scopulorum</i>	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6K	CONIFEROUS TREES	Pine, Jack <i>Pinus banksiana</i>	10-15	20-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-25	25-30/15
6K	CONIFEROUS TREES	Pine, Limber <i>Pinus flexilis</i>	10-15	25-40/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	35-55/15-20
6K	CONIFEROUS TREES	Pine, Ponderosa <i>Pinus ponderosa</i>	15-25	30-50/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-35	40-60/20
6K	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	15-25	30-50/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6K	CONIFEROUS TREES	Redcedar, Eastern <i>Juniperus virginiana</i>	10-20	20-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-25	30-40/20
6K	DECIDUOUS TREES	Catalpa, Northern <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	30-35/20
6K	DECIDUOUS TREES	Elm, Siberian <i>Ulmus pumila</i>	15-30	15-35/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6K	DECIDUOUS TREES	Hackberry <i>Celtis occidentalis</i>	15-20	30-40/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-30	50-60/30
6K	DECIDUOUS TREES	Honeylocust <i>Gleditsia triacanthos</i>	15-25	30-40/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	25-35	40-50/25-30
6K	DECIDUOUS TREES	Locust, Black 1/ <i>Robinia pseudoacacia</i>	20-25	25-35/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6K	DECIDUOUS TREES	Mulberry, Red <i>Morus rubra</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	20-25/15
6K	DECIDUOUS TREES	Mulberry, Russian or White <i>Morus alba var. tatarica</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	20-25/15
6K	DECIDUOUS TREES	Oak, Bur <i>Quercus macrocarpa</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	20-25/15
6K	DECIDUOUS TREES	Oak, Gambel <i>Quercus gambelii</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6K	DECIDUOUS TREES	Osage-orange <i>Maclura pomifera</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	30-35/20-25
6K	CONIFEROUS SHRUBS	Juniper, Common (Prostrate) <i>Juiperus communis</i>	4-7	4-7/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	4-7	4-7/15

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Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
6K	DECIDUOUS SHRUBS	Antelope Bitterbrush <i>Purshia tridentate</i>	2-3		Not Recommended		Not Recommended		Not Recommended	
6K	DECIDUOUS SHRUBS	Buffaloberry, Silver <i>Shepherdia argentea</i>	5-8		Not Recommended		Not Recommended		10-12	
6K	DECIDUOUS SHRUBS	Chokecherry, Common <i>Prunus virginiana</i>	5-8		Not Recommended		Not Recommended		8-14	
6K	DECIDUOUS SHRUBS	Cotoneaster, Peking <i>Cotoneaster acutifolia</i>	4-5		Not Recommended		Not Recommended		5-10	
6K	DECIDUOUS SHRUBS	Currant, Buffalo <i>Ribes odoratum</i>	3-6		Not Recommended		Not Recommended		3-6	
6K	DECIDUOUS SHRUBS	Currant, Golden <i>Ribes aureum</i>	2-4		Not Recommended		Not Recommended		4-6	
6K	DECIDUOUS SHRUBS	Peashrub, Siberian <i>Caragana arborescens</i>	6-8		Not Recommended		Not Recommended		8-10	
6K	DECIDUOUS SHRUBS	Saltbush, Fourwing <i>Atriplex canescens</i>	2-5		Not Recommended		Not Recommended		Not Recommended	
6K	DECIDUOUS SHRUBS	Sumac, Skunkbush <i>Rhus trilobata</i> Recommended cultivars: Big horn, Konza fragrant	3-5		Not Recommended		Not Recommended		4-8	

1/ Black Locust - for wildlife and pollinators (refer to table 11)

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
6D	CONIFEROUS TREES	Juniper, Rocky Mountain <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6D	CONIFEROUS TREES	Pine, Austrian <i>Pinus nigra</i>	Not Recommended	Not Recommended	15-20	20-25/20	15-20	25-35/20	20-25	30-40/20
6D	CONIFEROUS TREES	Pine, Jack <i>Pinus banksiana</i>	10-15	20-25/15	10-15	20-25/15	15-25	25-30/15	15-25	25-30/15
6D	CONIFEROUS TREES	Pine, Limber <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-45/15-20	15-20	30-45/15-20	20-25	35-55/15-20
6D	CONIFEROUS TREES	Pine, Pinyon [Two needle Pinyon] <i>Pinus edulis</i>	5-10	15-20/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6D	CONIFEROUS TREES	Pine, Ponderosa <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-55/20	20-30	35-55/20	20-35	40-60/20
6D	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-55/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6D	CONIFEROUS TREES	Redcedar, Eastern <i>Juniperus virginiana</i>	10-20	20-25/15	10-20	20-25/15	10-25	25-35/15-20	15-25	30-40/20
6D	DECIDUOUS TREES	Aspen, Quaking <i>Populus tremuloides</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	20-30	15-20	20-30
6D	DECIDUOUS TREES	Catalpa, Northern <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	30-35/20	15-20	30-35/20
6D	DECIDUOUS TREES	Elm, Siberian <i>Ulmus pumila</i>	15-30	15-35/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6D	DECIDUOUS TREES	Hackberry <i>Celtis occidentalis</i>	15-20	30-40/20	20-25	40-50/20	20-30	45-55/20	20-30	50-60/30
6D	DECIDUOUS TREES	Honeylocust <i>Gleditsia triacanthos</i>	15-25	30-40/20	20-30	30-40/20	25-30	35-45/20	25-35	40-50/25-30
6D	DECIDUOUS TREES	Locust, Black 1/ <i>Robinia pseudoacacia</i>	20-25	25-35/15	25-30	25-35/15	25-30	35-45/20	25-30	40-50/20
6D	DECIDUOUS TREES	Mulberry, Red <i>Morus rubra</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	20-25/15	10-15	20-25/15
6D	DECIDUOUS TREES	Mulberry, Russian or White <i>Morus alba var. tatarica</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	20-25/15	10-15	20-25/15
6D	DECIDUOUS TREES	Oak, Bur <i>Quercus macrocarpa</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	20-25/15	10-15	20-25/15

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
6D	DECIDUOUS TREES	Oak, Gambel <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6D	DECIDUOUS TREES	Osage-orange <i>Maclura pomifera</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	20-30/15	15-20	30-35/20-25
6D	DECIDUOUS TREES	Pear, Harbin <i>Pyrus ussuriensis</i> Recommended cultivar: McDermand	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	15-20/15	20-25	20-25/15
6D	CONIFEROUS SHRUBS	Juniper, Common (Prostrate) <i>Juiperus communis</i>	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15
6D	DECIDUOUS SHRUBS	Antelope Bitterbrush <i>Purshia tridentate</i>	2-3		2-3		Not Recommended		Not Recommended	
6D	DECIDUOUS SHRUBS	Buffaloberry, Silver <i>Shepherdia argentea</i>	5-8		10-12		10-12		10-12	
6D	DECIDUOUS SHRUBS	Chokecherry, Common <i>Prunus virginiana</i>	5-8		6-12		6-12		8-14	
6D	DECIDUOUS SHRUBS	Coralberry <i>Symphoricarpos orbiculatus</i>	Not Recommended		Not Recommended		2-3		2-3	
6D	DECIDUOUS SHRUBS	Cotoneaster, Peking <i>Cotoneaster acutifolia</i>	4-5		5-6		5-8		5-10	
6D	DECIDUOUS SHRUBS	Currant, Buffalo <i>Ribes odoratum</i>	3-6		3-6		3-6		3-6	
6D	DECIDUOUS SHRUBS	Currant, Golden <i>Ribes aureum</i>	2-4		2-4		4-6		4-6	
6D	DECIDUOUS SHRUBS	Peashrub, Siberian <i>Caragana arborescens</i>	6-8		6-8		6-10		8-10	
6D	DECIDUOUS SHRUBS	Rose, Arkansas [prairie rose] <i>Rosa arkansana</i>	1-2		1-2		1-2		4-7	
6D	DECIDUOUS SHRUBS	Rose, Hansen Hedge <i>Rosa</i> Sp. <i>Rosa rugosa</i> x <i>R. woodsii</i>	4-6		4-6		4-8		4-8	
6D	DECIDUOUS SHRUBS	Rose, Woods' <i>Rosa woodsii</i>	3-5		3-5		4-5		4-9	
6D	DECIDUOUS SHRUBS	Sagebrush, Silver <i>Artemisia cana</i>	3-6		Not Recommended		Not Recommended		Not Recommended	

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Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
6D	DECIDUOUS SHRUBS	Saltbush, Fourwing <i>Atriplex canescens</i>	2-5		Not Recommended		Not Recommended		Not Recommended	
6D	DECIDUOUS SHRUBS	Sandcherry, Western <i>Prunus besseyi</i>	2-3		2-3		2-4		3-6	
6D	DECIDUOUS SHRUBS	Snowberry, Common <i>Symphoricarpos albus</i>	Not Recommended		Not Recommended		2-3		2-3	
6D	DECIDUOUS SHRUBS	Snowberry, Western <i>Symphoricarpos occidentalis</i>	2-3		2-3		2-3		2-3	
6D	DECIDUOUS SHRUBS	Sumac, Skunkbush <i>Rhus trilobata</i> Recommended cultivars: Big horn, Konza fragrant	3-5		4-6		4-6		4-8	

1/ Black Locust - for wildlife and pollinators (refer to table 11)

Soils Group	Tree/Shrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
6DK	CONIFEROUS TREES	Juniper, Rocky Mountain <i>Juniperus scopulorum</i>	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	CONIFEROUS TREES	Pine, Jack <i>Pinus banksiana</i>	10-15	20-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	CONIFEROUS TREES	Pine, Limber <i>Pinus flexilis</i>	10-15	25-40/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	CONIFEROUS TREES	Pine, Ponderosa <i>Pinus ponderosa</i>	15-25	30-50/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	CONIFEROUS TREES	Redcedar, Eastern <i>Juniperus virginiana</i>	10-20	20-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	DECIDUOUS TREES	Elm, Siberian <i>Ulmus pumila</i>	15-30	15-35/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	DECIDUOUS TREES	Oak, Gambel <i>Quercus gambelii</i>	5-10	15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	CONIFEROUS SHRUBS	Juniper, Common (Prostrate) <i>Juniperus communis</i>	4-7	4-7/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	DECIDUOUS SHRUBS	Antelope Bitterbrush <i>Purshia tridentate</i>	2-3		Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	DECIDUOUS SHRUBS	Buffaloberry, Silver <i>Shepherdia argentea</i>	5-8		Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	DECIDUOUS SHRUBS	Chokecherry, Common <i>Prunus virginiana</i>	5-8		Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	DECIDUOUS SHRUBS	Cotoneaster, Peking <i>Cotoneaster acutifolia</i>	4-5		Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	DECIDUOUS SHRUBS	Currant, Buffalo <i>Ribes odoratum</i>	3-6		Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	DECIDUOUS SHRUBS	Currant, Golden <i>Ribes aureum</i>	2-4		Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	DECIDUOUS SHRUBS	Peashrub, Siberian <i>Caragana arborescens</i>	6-8		Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	DECIDUOUS SHRUBS	Saltbush, Fourwing <i>Atriplex canescens</i>	2-5		Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
6DK	DECIDUOUS SHRUBS	Sandcherry, Western <i>Prunus besseyi</i>	2-3		Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended

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Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
6DK	DECIDUOUS SHRUBS	Sumac, Skunkbush <i>Rhus trilobata</i> Recommended cultivars: Big horn, Konza fragrant	3-5		Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
7	CONIFEROUS TREES	Juniper, Rocky Mountain <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
7	CONIFEROUS TREES	Pine, Austrian <i>Pinus nigra</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-20	25-35/20	20-25	30-40/20
7	CONIFEROUS TREES	Pine, Bristlecone <i>Pinus aristata</i>	5-10	20-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
7	CONIFEROUS TREES	Pine, Jack <i>Pinus banksiana</i>	10-15	20-25/15	10-15	20-25/15	15-25	25-30/15	15-25	25-30/15
7	CONIFEROUS TREES	Pine, Limber <i>Pinus flexilis</i>	5-10	15-20/10	5-10	15-20/10	10-15	20-30/20	15-20	25-35/20
7	CONIFEROUS TREES	Pine, Pinyon [Two needle Pinyon] <i>Pinus edulis</i>	5-10	15-20/15-20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
7	CONIFEROUS TREES	Pine, Ponderosa <i>Pinus ponderosa</i>	10-20	30-40/20	10-20	30-45/20	20-30	35-45/20	20-35	35-45/20
7	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	10-20	30-40/20	10-20	30-45/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
7	CONIFEROUS TREES	Redcedar, Eastern <i>Juniperus virginiana</i>	10-20	20-25/15	10-25	20-25/15	10-25	25-35/15-20	15-25	25-35/20
7	DECIDUOUS TREES	Apricot, Manchurian <i>Prunus armeniaca</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-20	10-20/10
7	DECIDUOUS TREES	Elm, Siberian <i>Ulmus pumila</i>	15-20	30-35	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
7	DECIDUOUS TREES	Hackberry <i>Celtis occidentalis</i>	10-15	25-30	10-15	25-30	10-15	25-30	10-15	30-35
7	DECIDUOUS TREES	Honeylocust <i>Gleditsia triacanthos</i>	Not Recommended	Not Recommended	10-15	20-25	10-15	20-25	25-35	40-50/25-30
7	DECIDUOUS TREES	Locust, Black 1/ <i>Robinia pseudoacacia</i>	20-25	25-35/15	25-30	25-35/15	25-30	35-45/20	25-30	40-50/20
7	DECIDUOUS TREES	Mulberry, Red <i>Morus rubra</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	20-25/15
7	DECIDUOUS TREES	Mulberry, Russian or White <i>Morus alba var. tatarica</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	20-25	20-25/15
7	DECIDUOUS TREES	Oak, Bur <i>Quercus macrocarpa</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	25-35/20-30	15-20	30-40
7	DECIDUOUS TREES	Oak, Gambel <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
7	DECIDUOUS TREES	Osage-orange <i>Maclura pomifera</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	30-35/20-25
7	CONIFEROUS SHRUBS	Juniper, Common (Prostrate) <i>Juiperus communis</i>	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15
7	DECIDUOUS SHRUBS	Buffaloberry, Silver <i>Shepherdia argentea</i>	5-8		10-12		10-12		10-12	
7	DECIDUOUS SHRUBS	Chokecherry, Common <i>Prunus virginiana</i>	5-8		6-12		6-12		8-14	

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
7	DECIDUOUS SHRUBS	Currant, Buffalo <i>Ribes odoratum</i>	2-4		2-4		2-4		2-4	
7	DECIDUOUS SHRUBS	Currant, Golden <i>Ribes aureum</i>	2-4		2-4		4-6		4-6	
7	DECIDUOUS SHRUBS	Peashrub, Siberian <i>Caragana arborescens</i>	6-8		6-8		8-10		8-10	
7	DECIDUOUS SHRUBS	Plum, American <i>Prunus americana</i>	5-7		5-8		5-8		6-10	
7	DECIDUOUS SHRUBS	Rose, Arkansas [prairie rose] <i>Rosa arkansana</i>	1-2		1-2		1-2		1-2	
7	DECIDUOUS SHRUBS	Rose, Hansen Hedge <i>Rosa</i> Sp. <i>Rosa rugosa x R. woodsii</i>	4-6		4-6		4-8		6-8	
7	DECIDUOUS SHRUBS	Rose, Woods' <i>Rosa woodsii</i>	3-5		3-5		4-5		4-5	
7	DECIDUOUS SHRUBS	Sandcherry, Western <i>Prunus besseyi</i>	2-3		2-3		2-4		3-6	
7	DECIDUOUS SHRUBS	Snowberry, Western <i>Symphoricarpos occidentalis</i>	2-3		2-3		2-3		2-3	
7	DECIDUOUS SHRUBS	Sumac, Skunkbush <i>Rhus trilobata</i> Recommended cultivars: Big horn, Konza fragrant	3-5		4-6		4-6		4-8	

1/ Black Locust - for wildlife and pollinators (refer to table 11)

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
8	CONIFEROUS TREES	Juniper, Rocky Mountain 1/ <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
8	CONIFEROUS TREES	Pine, Bristlecone <i>Pinus aristata</i>	5-10	25-30/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
8	CONIFEROUS TREES	Pine, Limber 1/ <i>Pinus flexilis</i>	10-15	25-40/15	10-15	25-45/15-20	15-20	30-45/15-20	20-25	35-55/15-20
8	CONIFEROUS TREES	Pine, Ponderosa 1/ <i>Pinus ponderosa</i>	15-25	30-50/20	15-30	30-55/20	20-30	35-55/20	20-35	40-60/20
8	CONIFEROUS TREES	Pine, Southwestern White <i>Pinus strobiformis</i>	15-25	30-50/20	15-30	30-55/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended
8	CONIFEROUS TREES	Redcedar, Eastern 1/ <i>Juniperus virginiana</i>	10-20	20-25/15	10-20	20-25/15	10-25	25-35/15-20	15-25	30-40/20
8	DECIDUOUS TREES	Apricot, Manchurian <i>Prunus armeniaca</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	10-15/10	10-20	10-20/10
8	DECIDUOUS TREES	Ash, Green 1/, 2/ <i>Fraxinus pennsylvanica</i>	10-15	20-25/20	10-15	20-25/20	10-15	20-25/20	10-15	25-30/20-25
8	DECIDUOUS TREES	Aspen, Quaking 1/ <i>Populus tremuloides</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	20-30	15-20	20-30
8	DECIDUOUS TREES	Catalpa, Northern 1/ <i>Catalpa speciosa</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	15-20	30-35/20	15-20	30-35/20
8	DECIDUOUS TREES	Elm, Siberian 1/ <i>Ulmus pumila</i>	15-20	30-35/20	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended	Not Recommended
8	DECIDUOUS TREES	Hackberry 1/ <i>Celtis occidentalis</i>	10-15	25-30/20	10-15	25-30/20	10-15	25-30/20	10-15	30-35/30
8	DECIDUOUS TREES	Honeylocust 1/ <i>Gleditsia triacanthos</i>	Not Recommended	Not Recommended	10-15	20-25/15-20	10-15	20-25/20	25-35	40-50/25-30
8	DECIDUOUS TREES	Oak, Bur 1/ <i>Quercus macrocarpa</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	25-35/30	15-20	40-60/30-40
8	DECIDUOUS TREES	Oak, Gambel 1/ <i>Quercus gambelii</i>	5-10	15-20	10-15	25	Not Recommended	Not Recommended	Not Recommended	Not Recommended
8	DECIDUOUS TREES	Osage-orange 1/ <i>Maclura pomifera</i>	Not Recommended	Not Recommended	Not Recommended	Not Recommended	10-15	20-25/15-20	10-15	30-35/20-25
8	CONIFEROUS SHRUBS	Juniper, Common (Prostrate) <i>Juniperus communis</i>	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15	4-7	4-7/15

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Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
8	DECIDUOUS SHRUBS	Antelope Bitterbrush 1/ <i>Purshia tridentate</i>	2-3		Not Recommended		Not Recommended		Not Recommended	
8	DECIDUOUS SHRUBS	Buffaloberry, Silver 1/ <i>Shepherdia argentea</i>	5-8		10-12		10-12		10-12	
8	DECIDUOUS SHRUBS	Chokecherry, Common 1/ <i>Prunus virginiana</i>	5-8		6-12		6-12		8-14	
8	DECIDUOUS SHRUBS	Currant, Buffalo 1/ <i>Ribes odoratum</i>	2-4		2-4		3-6		3-6	
8	DECIDUOUS SHRUBS	Currant, Golden 1/ <i>Ribes aureum</i>	2-4		2-4		4-6		4-6	
8	DECIDUOUS SHRUBS	Lilac 1/ <i>Syringa vulgaris</i>	5-6		5-6		5-8		6-10	
8	DECIDUOUS SHRUBS	Mahogany, Mountain 1/ <i>Cercocarpus montana</i>	5-10		5-10		Not Recommended		Not Recommended	
8	DECIDUOUS SHRUBS	Peashrub, Siberian 1/ <i>Caragana arborescens</i>	6-8		6-8		8-10		8-10	
8	DECIDUOUS SHRUBS	Plum, American 1/ <i>Prunus americana</i>	5-7		5-8		5-8		6-10	
8	DECIDUOUS SHRUBS	Sumac, Skunkbush 1/ <i>Rhus trilobata</i> Recommended cultivars: Big Horn, Konza Fragrant	3-5		4-6		4-6		4-8	

1/ Adapted to calcareous soils

2/ Green Ash - only to be used in diverse tree and shrub plantings; **not windbreaks**

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
9L	CONIFEROUS TREES	Juniper, Rocky Mountain <i>Juniperus scopulorum</i>	10-20	15-25/15	10-20	15-25/15	Not Recommended	Not Recommended	Not Recommended	Not Recommended
9L	CONIFEROUS TREES	Redcedar, Eastern <i>Juniperus virginiana</i>	10-20	20-25/15	10-20	20-25/15	10-25	25-35/15-20	15-25	30-40/20
9L	DECIDUOUS TREES	Boxelder <i>Acer negundo</i>	15-20	25-35/20	15-20	25-35/20	15-20	30-35/20	20-25	35-40/20
9L	DECIDUOUS SHRUBS	Buffaloberry, Silver <i>Shepherdia argentea</i>	5-8		10-12		10-12		10-12	
9L	DECIDUOUS SHRUBS	Peashrub, Siberian <i>Caragana arborescens</i>	6-8		6-8		8-10		8-10	
9L	DECIDUOUS SHRUBS	Sagebrush, Big <i>Artemisia tridentata</i>	3-6		Not Recommended		Not Recommended		Not Recommended	
9L	DECIDUOUS SHRUBS	Sagebrush, Silver <i>Artemisia cana</i>	3-6		Not Recommended		Not Recommended		Not Recommended	
9L	DECIDUOUS SHRUBS	Saltbush, Fourwing <i>Atriplex canescens</i>	2-5		Not Recommended		Not Recommended		Not Recommended	
9L	DECIDUOUS SHRUBS	Sumac, Skunkbush <i>Rhus trilobata</i> Recommended cultivars: Big horn, Konza fragrant	3-5		4-6		4-6		4-8	

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
9W	Trees/shrubs not recommended on this site									

Group 9W = Wet - Saline/Alkaline soils

Soils Group	TreeShrub Type	Species	ZONE I		ZONE II		ZONE III		ZONE IV	
			20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE	20-YEAR	MATURE
			HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)	HEIGHT (ft)	HGT/SPREAD (ft)
10	Site Visit Required									

Note: Site visit required before any species can be recommended due to soil limitations, such as soil depth, texture, drainage, channeled phases, available water capacity, slope or salts which severely limit planting, species selection, survival or growth of trees and shrubs. Recommend checking with local forester for technical assistance.

Summary - List of Attributes by Species for Conservation Tree/Shrub Plantings in Nebraska

Coniferous Trees	PLANTS Database Symbol	Native by Vegetative Zones I, II, III, or IV N = Not Native	Shade Tolerance (1)	Flood Tolerance (2)	Wildlife Value (3)				Windbreak Density (4)		Products (5)	Root Suckering (6) N = No, Y = Yes	Comments (7)
					Use Groups	Function	Rating	Season	Summer	Winter			
Arborvitae, American or Northern White Cedar (<i>Thuja occidentalis</i>)	THOC2	N	L	M	SB	C	L	N/A	H	H	F	N	Native to Great Lakes region and Northeastern US. Prefers moist, fertile soils. Subject to winter burn. Plantings limited to eastern Nebraska. Height 20-30 ft.
Arborvitae, Oriental (<i>Platycladus orientalis</i>)	PLOR80	N	M	M	SB	C	L	N/A	H	H	F, B	N	Winter hardiness questionable in Vegetative Zone III (seed source important). Prefers moist, well-drained soils. Possible substitute for eastern redcedar in windbreaks. Plantings limited to eastern Nebraska. Height to 20 ft.
Baldcypress (<i>Taxodium distichum</i>)	TADI2	N	M	H	SB	C	L	N/A	M	L	L	N	Deciduous conifer - rust fall color and loses needles in fall. Prefers acid soils; tolerates slightly alkaline soils. Drought tolerant. Winter hardiness questionable in Vegetative Zone III. Height to 60 ft.
Fir, Douglas (<i>Pseudotsuga menziesii</i>)	PSME	N	M	L	SB	B	M	F	H	H	C, L	N	Delicate; protect from strong winds. Uses include wildlife habitat - seed source is important for songbirds. Height to 60 ft.
Fir, White (<i>Abies concolor</i>)	ABCO	N	H	L	SB	B	M	F	H	H	C	N	Delicate. Uses include wildlife habitat - seed source important for songbirds. Height to 60 ft.
Juniper, Rocky Mountain (<i>Juniperus scopulorum</i>)	JUSC2	I, II	M	L	SB GB	B	H	F/W	H	H	C, S	N	Cercospora a problem in eastern Nebraska. Only female plants produce seeds. Adapted to wide range of soil types. Drought tolerant. Use in windbreaks and wildlife habitat. Height to 40 ft.
Pine, Austrian (<i>Pinus nigra</i>)	PINI	N	L	L	SB GB	B	M	F/W	M	M	C	N	Affected by dothistroma and tip blight; moderately susceptible to pine wilt disease. Adapted to range of pH and soils. Drought tolerant. Use for windbreaks and wildlife habitat. Height to 50 ft.
Pine, Bristlecone (<i>Pinus aristata</i>)	PIAR	N	L	L	SB	C	L	N/A	M	M		N	Does not thrive in humid eastern prairies; susceptible to dothistroma and tip blight. Lives longer in dry climates; hardy and long-lived on sunny, dry, infertile sites. Height to 20 ft.
Pine, Eastern White (<i>Pinus strobus</i>)	PIST	N	M	L	SB	C	L	N/A	M	M	C, L, B	N	Needs protection from winds; avoid use in outside rows. Fine needles in clusters of five. Height to 60 ft.
Pine, Jack (<i>Pinus banksiana</i>)	PIBA2	N	L	L	SB	C	L	N/A	M	M		N	Moderately susceptible to pine wilt disease. Possible substitute for eastern redcedar in windbreaks. Adapted to range of pH and soils - including very sandy soils. Drought tolerant. Native to Great Lakes region and Canada. Height to 60 ft.
Pine, Limber (<i>Pinus flexilis</i>)	PIFL2	I	L	L	SB	C	L	N/A	M	M	F	N	Susceptible to dothistroma needle blight and blister rust. Slow growing. Windbreak species in Zone I. Native population in Kimball Co. Excellent for wildlife plantings. Use in multirow windbreaks only. Height to 50 ft.
Pine, Pinyon (Two Needle) (<i>Pinus edulis</i>)	PIED	N	L	L	SB GB	B	H	F	H	H	C, P, F, E1	N	Slow growing. Excellent winter hardiness, drought resistant and tolerant of alkaline soils. Excellent species for wildlife. Pine 'nut' edible by wildlife and humans. Height to 30 ft.
Pine, Ponderosa (<i>Pinus ponderosa</i>)	PIPO	I, II, III	L	L	SB GB	B	H	F/W	M	M	C, L, P, F, B	N	Susceptible to tip blight/Zimmerman moth. Use for windbreaks and wildlife habitat. Wild turkey utilize seed source. Prefers acid soils; tolerates low fertility and drought. Height to 50 ft.

Summary - List of Attributes by Species for Conservation Tree/Shrub Plantings in Nebraska

Coniferous Trees	PLANTS Database Symbol	Native by Vegetative Zones I, II, III, or IV N = Not Native	Shade Tolerance (1)	Flood Tolerance (2)	Wildlife Value (3)				Windbreak Density (4)		Products (5)	Root Suckering (6) N = No, Y = Yes	Comments (7)
					Use Groups	Function	Rating	Season	Summer	Winter			
Pine, Southwestern White (<i>Pinus strobiformis</i>)	PIST3	N	L	L	SB	C	L	N/A	M	M	C, F	N	Native to Arizona, New Mexico, and Mexico. Susceptible to dothistroma needle blight and blister rust. Faster growing than limber pine. Use as windbreak species in southwestern NE only. Seed source should be from elevations above 7600 ft. Height to 110 ft.
Redcedar, Eastern (<i>Juniperus virginiana</i>)	JUVI	I, II, III, IV	M	M	SB GB	B	H	F/W	H	H	P, S, L	N	Invasive in grasslands in eastern and central Nebraska; only female plants produce seeds. Reliable windbreak species. Cercospora can be a problem. Height to 50 ft.
Spruce, Colorado Blue (<i>Picea pungens</i>)	PIPU	N	M	L	SB	B	M	F/W	H	H	C	N	Color range from green to blue. Uses include windbreaks and wildlife habitat. Height to 60ft.
Spruce, Norway (<i>Picea abies</i>)	PIAB	N	M	L	SB	B	M	F/W	H	H		N	Long, banana shaped cones. Uses include windbreaks and wildlife habitat. Height to 60 ft.
Spruce, White (<i>Picea glauca</i>) (recommended Black Hills variety (<i>Picea glauca densata</i>))	PIGL PIGLD	N	M	L	SB	C	L	N/A	H	H		N	Small cones. Most tolerant spruce tree for wind, cold, heat, and drought. Height to 40 ft.

(1) **Shade Tolerance** - adaptation for underplantings (H = high, M = medium, L = low)

(2) **Flood Tolerance** - relative value in riparian locations (H = high tolerance of frequent Flood with poor drainage, M - medium tolerance to Flood and needs good drainage, L = low tolerance of Flood)

(3) **Wildlife Value - Use Groups:** SM = small mammals, LM = large mammals, SB = song birds, GB = game birds, MB = moths/butterflies; Function: F = food, C = cover, B = both; Rating: H = high value on a long-term use, M = high value on a seasonal basis, L = value on a limited, short-term basis; Season when food is available: Sp = Spring, Su = Summer, F = Fall, W = Winter, N/A = Not Applicable

(4) **Windbreak Density** - Summer = comparable protection from wind; Winter = comparable protection from wind and snow drifting; H = high, M = medium, L = low

(5) **Products** - C = Christmas trees, P = posts, S = shavings, L = lumber, F = firewood, B = biomass, E1 = edible directly off the plant, E2 = edible if processed

(6) **Root Suckering** - comparable aggressiveness to root sprout, N = No, Y = Yes

(7) **Comments** - check with your local forester or natural resource professional for other possible considerations

Summary - List of Attributes by Species for Conservation Tree/Shrub Plantings in Nebraska

Deciduous Trees	PLANTS Database Symbol	Native by Vegetative Zones I, II, III, or IV N = Not Native	Shade Tolerance (1)	Flood Tolerance (2)	Wildlife Value (3)				Windbreak Density (4)		Products (5)	Root Suckering (6) N = No, Y = Yes	Comments (7)
					Use Groups	Function	Rating	Season	Summer	Winter			
Apricot, Manchurian (<i>Prunus armeniaca</i>)	PRAR3	N	L	L	SM SB	F	M	Su	M	L	E2	N	Native of China. Cultivated for fruit. Varieties <i>mandshurica</i> Maxim. and <i>sibirica</i> L. are hardy with potential ornamental value in the northern Great Plains. Prefers sun; pH and soil adaptable. Autumn foliage golden. Use native fruit-bearing species in unaltered habitats. Songbirds attracted to fruit. Height to 30 ft.
Ash, Green (<i>Fraxinus pennsylvanica</i>)	FRPE	I, II, III, IV	M	H	SM SB	B	H	Sp-F	M	L	F, L	N	Highly susceptible to Emerald Ash Borer that will kill infected trees. Susceptible to native ash borers when young. Historically was widely used in shelterbelt plantings. Currently recommended for use in diverse tree plantings and wildlife plantings only; not for windbreaks . Height to 70 ft.
Aspen, Quaking (<i>Populus tremuloides</i>)	POTR5	I, II	L	L	GB LM	B	H	All	M	L		Y	Suckers when mature to form aspen grove. Buds and catkins eaten by birds; leaves and twigs provide big game browse. Height to 60 ft.
Basswood/Linden, American (<i>Tilia americana</i>)	TIAM	III, IV	H	M	SB MB	B	M	Su/F	M	L	L	N	Native to eastern NE, west to Cherry County along the Niobrara River, and west to Morse Bluff on the Platte River. Also native from the eastern portions of the Dakotas, KS, and OK to the Atlantic Coast from NC to ME. Prefers sun to partial shade, deep, moist fertile soils; pH adaptable. Drought tolerant. Grows best on well watered, partially shaded sites protected from desiccating winds. Flowers used extensively by bees. Used as carving wood. Height to 70 ft.
Birch, Paper (<i>Betula papyrifera</i>)	BEPA	II	M	L	SB LM	B	M	F/W	M	L		N	Native along Niobrara Valley. Bark is white and peeling. Buds and twigs used to a limited degree by songbirds and deer, respectively. Short life span. Bronze birch borer a problem. Height to 50 ft.
Birch, River (<i>Betula nigra</i>)	BENI	N	M	M	SB LM	F	L	F/W	M	L		Y	Suitable for Vegetative Zone IV on moist soils. Bark has salmon pink shades. Height to 40 ft.
Boxelder (<i>Acer negundo</i>)	ACNE2	I, II, III, IV	L	H	SM SB	B	H	Sp-F	M	L		N	Short-lived tree with multiple trunk form. Provides good cavities for wildlife shelter. Hardy on poor sites; common in riparian areas. Songbirds attracted to seeds. Height to 50 ft.
Catalpa, Northern (<i>Catalpa speciosa</i>)	CASP8	IV	L	M	MB SB	C	L	N/A	M	L	F	N	Large leaves; white flowers; long seed pods. Susceptible to ash borers. Height to 60 ft.
Cherry, Black (<i>Prunus serotina</i>)	PRSE2	III, IV	L	L	SB SM	B	H	Su	M	L	L, E2	N	Native to eastern Nebraska; prefers moist fertile soils on bottomlands. Valuable timber species. Height to 60 ft.
Cottonwood, Eastern or Plain (<i>Populus deltoides</i>) Recommended cultivars: Might Mo, Noreaster, Platte	PODE3	I, II, III, IV	L	H	SM SB	B	H	F/W	M	L	B, L, S	N	Nebraska state tree. Susceptible to Cytospora canker on uplands. Prefers moist soils, especially along rivers and streams. Wildlife use twigs as browse when young and is a good den tree when mature. Height to 80 ft.

Summary - List of Attributes by Species for Conservation Tree/Shrub Plantings in Nebraska

Deciduous Trees	PLANTS Database Symbol	Native by Vegetative Zones I, II, III, or IV N = Not Native	Shade Tolerance (1)	Flood Tolerance (2)	Wildlife Value (3)				Windbreak Density (4)		Products (5)	Root Suckering (6) N = No, Y = Yes	Comments (7)
					Use Groups	Function	Rating	Season	Summer	Winter			
Crabapple (<i>Malus sp.</i>) (Siberian crab is <i>M. baccata</i> ; Sargent crab is <i>M. sargentii</i>)	MABA	N	L	L	SB SM	B	M	Su/F	M	L		N	Countless crabapple hybrids and varieties exist with varying characteristics. Radiant is a 25-30 ft. pink-flowered cultivar of Siberian that is susceptible to scab. Midwest is a 15-25 ft. white-flowered cultivar of Siberian. Roselow is a white-flowered, 6-8 ft., shrub-like cultivar of Sargent.
Crabapple, Prairie (<i>Malus ionensis</i>)	MAIO	IV	L	L	SB SM	B	H	Su/F	M	L		Y	Species is native to extreme eastern Nebraska. Susceptible to cedar-apple rust. Fruit is small, hard, and green. Suckering roots form thickets. Height to 20 ft.
Elm, American (<i>Ulmus americana</i>)	ULAM	I, II, III, IV	M	M	SB SM	B	M	Sp	M	L	F, L	N	Not recommended because of susceptibility to Dutch Elm Disease. Red or slippery elm (<i>Ulmus rubra</i>) may be a suitable native substitute. Height to 70ft.
Elm, Siberian (<i>Ulmus pumila</i>)	ULPU	N	M	L	SB	B	L	Sp	M	L	F, L	N	Invasive into grasslands and disturbed areas by seedling establishment. Recommended for Veg. Zone I only. Strongly suggest seeking alternate species for Veg. Zones II, III, and IV. Often mistakenly called Chinese elm. Seeds eaten by songbirds. Height to 80 ft.
Hackberry (<i>Celtis occidentalis</i>)	CEOC	I, II, III, IV	H	M	SB SM	B	H	Su	M	L	F, L	N	Common windbreak species; adapted to wide range of soils. Susceptible to herbicide drift. Nipple gall common on leaves. Songbirds eat seeds. Height to 70 ft.
Hawthorn, Cockspur (<i>Crataegus crusgalli</i>)	CRCR2	N	L	L	SB SM	B	H	F/W	M	L		N	Native to eastern US. Sharp thorns on some varieties. Red fruits persist into winter. Height to 20 ft.
Hawthorn, Washington (<i>Crataegus phaenopyrum</i>)	CRPH	N	L	M	SB SM	B	H	F/W	M	L		N	Common conservation species. Often thorny. Red berries persist into winter. Possible rust problems. Height to 30 ft.
Hickory, Bitternut (<i>Carya cordiformis</i>)	CACO15	III, IV	M	M	SM SB	B	H	F	M	L	F	N	Native to eastern Nebraska in association with oaks. Slow growing. Bark is smooth. Nut is bitter. Height to 80 ft.
Hickory, Shagbark (<i>Carya ovata</i>)	CAOV2	IV	M	L	SM SB	B	H	F	M	L	L, F, E2	N	Native to Missouri River bluff woodlands. Extremely slow growing. Bark forms large plates when mature. Nut is edible but extraction is difficult. Height to 80 ft.
Honeylocust (<i>Gleditsia triacanthos</i>)	GLTR	III, IV	L	M	LM SM	F	M	Su-F	M	L	F, L	Y	Nitrogen fixing legume. Common windbreak tree. Seeds eaten by small mammals; pods eaten by cattle. Possible thorns. Potentially invasive in grasslands in eastern Nebraska. Height to 60 ft.
Hophornbeam, Eastern or Ironwood (<i>Ostrya virginiana</i>)	OSVI	III, IV	H	L	SM SB	B	M	Su	M	L	F	N	Difficult to obtain as nursery stock. Small tree with very dense wood. Understory species that does well in shady conditions. Height to 40 ft.
Kentucky Coffeetree (<i>Gymnocladus dioicus</i>)	GYDI	III, IV	L	L	SB	C	L	N/A	M	L		Y	Nitrogen fixing legume. Prefers moist fertile soils but adapted a wide range. Drought resistant. Possible toxicity of seeds to humans. Nonaggressive root suckering. Height to 60 ft.
Locust, Black (<i>Robinia pseudoacacia</i>)	ROPS	N	L	L	SB	C	L	N/A	M	L	P, F	Y	Nitrogen fixing legume. Problems with locust borer. Bark and seeds may be toxic. Aggressive root suckering; potentially invasive due to spontaneous root suckers causing clonal spread. Height to 60 ft.

Summary - List of Attributes by Species for Conservation Tree/Shrub Plantings in Nebraska

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					Use Groups	Function	Rating	Season	Summer	Winter			
Maple, Amur (Acer ginnala) (recommended cultivar: Flame)	ACGI	N	M	M	SB	B	H	Su-W	M	L		N	Small tree or large shrub form. Beautiful autumn color. Seeds eaten by songbirds and twigs browsed by deer. Height to 15 ft.
Maple, Silver (Acer saccharinum)	ACSA2	III, IV	M	H	SM SB	B	M	Sp/S u	M	L	B, F	Y	Narrow crotch angles may produce multiple stems; susceptible to wind breakage. Nonaggressive root suckering. Fastest growing maple. Common in riparian areas. Height to 60 ft.
Maple, Sugar (Acer saccharum)	ACSA3	N	M	M	SM SB	B	M	Sp/S u	M	L	F, L, E2	Y	Orange/red fall color. Winter hardiness questionable in northern Nebraska. Sap is source of maple syrup. Nonaggressive root suckering. Height to 60 ft.
Mulberry, Red (Morus rubra)	MORU2	IV	H	L	SB SM	B	H	Sp	M	L	F, P, E1, E2	N	Native to southeast Nebraska. Leaves often not lobed compared to white mulberry and all fruits mature purple to black. Only female plants produce seeds. Height to 50 ft.
Mulberry, Russian or White (Morus alba var. tatarica)	MOAL	N	H	L	SB SM	B	M	Sp	M	L	E1, E2	N	Hybridizes with red mulberry in the wild. Leaves often lobed compared to red mulberry and some fruits mature as white. Only female plants produce seeds. Height to 40 ft.
Oak, Black (Quercus velutina)	QUVE	IV	M	L	SM GB	B	H	F	M	L	F	N	Natural site is typically rocky, sandy to clay soil on a dry upland. Approaches northern red oak stature on fertile, bottomland soil. Autumn foliage red, leaves persist through winter. Grows best on sunny site in fertile, moist soil, neutral to acidic. Height to 50 ft.
Oak, Bur (Quercus macrocarpa)	QUMA2	I, II, III, IV	M	L	SM GB	B	H	F	M	L	F, L	N	Drought tolerant. Prefers sunny site; pH and soil adaptable. Tolerates occasional poor drainage and inundation. Round, wide spreading crown. Name from bur-like fringe located around rim of acorn cup. Ranges from south central Canada throughout the Great Plains states. Lacks bright fall color. Drops leaves after first sharp freeze. Height to 75 ft.
Oak, Chinkapin (Quercus muhlenbergii)	QUMU	IV	L	L	SM GB	B	H	F	M	L	F	N	Drought tolerant. Prefers sunny site; pH and soil adaptable. Generally grown on well-drained sites, from streambanks to dry ridges, with a preference for soils of limestone origin. Seldom found on acidic soils. Sweet acorns were consumed by Native Americans and are excellent wildlife food. Rounded crown. Ranges from central TX and OK to eastern KS and the northeastern U.S. Does not display bright fall colors. Height to 60 ft.
Oak, English (Quercus robur)	QURO2	N	M	L	SM GB	B	H	F	M	L	F, L	N	Native to Europe, East Asia, and North Africa, resulting in extensive genetic variability. Recognized by long-stalked acorns. Drought tolerant. Prefers sunny site; pH and soil adaptable. Height to 65 ft.

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					Use Groups	Function	Rating	Season	Summer	Winter			
Oak, Gambel (<i>Quercus gambelii</i>)	QUGA	I	L	L	SM GB	B	H	F	M	L		N	Suitable for small spaces and dry sites. Ranges from dry foothills, canyons, and lower slopes of mountains of NV, UT, CO, AZ, NM, and fringes of adjoining states and Mexico. Locally known as scrub oak due to slow growth and tendency to form thickets. Acorns are excellent wildlife food. Crown is narrow and sparse. Wood is hard, heavy and close grained. Prefers sunny sites; pH and soil adaptable; drought tolerant. Height to 20 ft.
Oak, Northern Red (<i>Quercus rubra</i>)	QURU	IV	M	L	SM GB	B	H	F	M	L	F, L	N	Native to states east of the Great Plains; grows on eastern fringes of the Plains. Acorns valuable wildlife food. Is a substitute for pin oak in many situations with less chance of becoming chlorotic on calcareous soils. Produces strong, hard wood used in flooring, furniture, veneer, and interior finishing. Rounded spreading crown. Reddish autumn color. Grows best in sun. Prefers fertile, moist soils, neutral to acidic. Drought tolerant. Height to 70 ft.
Oak, Pin (<i>Quercus palustris</i>)	QUPA2	N	L	H	SM GB	B	H	F	M	L	F	N	Native to the U.S. from eastern KS to the Atlantic coast and from TN to southern MI. Acorns valuable wildlife food. Grows naturally on poorly drained, claypan soils and withstands short periods of flooding. Iron chlorosis and growth stunting are problems if planted in calcareous soils. Prefers sun to partial shade, fertile, moist, neutral to acidic soils. Pyramidal crown. Variable autumn foliage from green to shades of yellow and red. Does not produce high quality lumber due to many small persistent branches. Height to 60 ft.
Oak, Swamp White (<i>Quercus bicolor</i>)	QUBI	N	M	H	SM GB	B	H	F	M	L	F	N	Occurs naturally in lowlands and swamp edges from IA to MO eastward to the Atlantic coast. Easily mistaken for bur oak or white oak due to leaf similarities. It has long and slender-stalked acorns similar to English oak. Prefers sun and moist, fertile, neutral to acidic soils. Tolerates compact soils high in clay. Rounded crown. Autumn foliage from subdued brownish yellows and reds, often persistent through winter. Acorns valuable wildlife food. Wood is heavy, strong, hard, moderately durable. Height to 60 ft.
Oak, White (<i>Quercus alba</i>)	QUAL	IV	M	L	SM GB	B	H	F	M	L	F, L	N	Native to southern MN, IA, south into eastern TX and all states to the east. Desirable windbreak tree in Zone IV because leaves tend to persist throughout winter. Round crown. Durable wine red autumn foliage. Acorns provide wildlife food. Prefers sun, fertile, moist, neutral to acidic soils. Can be found on upland sites within its native range. Drought tolerant. Height to 70 ft.
Osage-orange (<i>Maclura pomifera</i>)	MAPO	N	L	M	SB GB	B	M	Su/F	M	L	P, F	N	Extremely hard, durable wood for posts. Large 'hedge apple' fruit; seeds eaten by quail/squirrels. Not very winter hardy. Invasive into grasslands in southeast NE. Height to 40 ft.
Pawpaw (<i>Asimina Adans</i>)	ASIMI	IV	H	L	SM SB	F	L	Su	M	L	E2	N	Recommended only in southeast Nebraska. Potential medicinal use. Fruit can be consumed by humans. Height to 25 ft.

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					Use Groups	Function	Rating	Season	Summer	Winter			
Pear, Chinese (Harbin) <i>(Pyrus ussuriensis)</i> (recommended cultivar: McDermard)	PYUS2	N	L	L	SM SB	B	L	Su/F	M	L		N	Slow growth but well adapted to northern prairie climate. White flowers; reddish fall leaf color; round greenish-yellow to light brown fruit. Height to 30 ft.
Pecan, Northern <i>(Carya illinoensis)</i>	CAIL2	N	L	L	SM SB	B	H	F	M	L	L, E1, E2	N	Use northern seed source or hardy cultivars. Excellent nut species and valuable timber species. Suitable to southeast Nebraska (southern half of Veg. Zone 4 only). Height to 80 ft.
Redbud, Eastern <i>(Cercis canadensis)</i>	CECA4	IV	H	L	SB MB	F	M	F	L	L		N	Winter hardiness is questionable (seed source important). Susceptible to 2,4-D herbicide. Beautiful early spring flowers. Height to 30 ft.
Sycamore, American <i>(Platanus occidentalis)</i>	PLOC	IV	L	H	SB SM	C	L	N/A	M	L	B, L	N	Anthraxnose disease is a potential problem. Prefers deep, moist rich soils found in bottomlands. Height to 80 ft.
Walnut, Black <i>(Juglans nigra)</i>	JUNI	III, IV	L	L	SM	F	H	F	M	L	L, F, E2	N	Sensitive to broadleaf herbicides. Green husk on nut turning dark brown at maturity. Needs well-drained soils. Most valuable of timber trees. Height to 70 ft.
Willow, Black <i>(Salix nigra)</i>	SANI	III, IV	L	H	SB GB LM	B	H	F/W	M	L	B	N	Native only to extreme eastern Nebraska. Often confused with peachleaf willow. Short-lived species. Buds and twigs consumed by various wildlife species. Cytospora canker on upland sites. Height to 60 ft.
Willow, Peach Leaf <i>(Salix amygdaloides)</i>	SAAM2	I, II, III, IV	L	H	SB GB LM	B	H	F/W	M	L		N	Native across Nebraska - especially central and west. Similar to black willow but leaves are slightly wider and whitish on underside. Buds and twigs consumed by various wildlife species. Used by cavity nesting birds. Height up to 60 ft.
Willow, White (or Golden) <i>(Salix alba)</i> (Cultivars Vitellina or Tristis often called Golden Willow)	SAAL2	N	L	H	SB SM	C	L	N/A	M	L		N	Grows well in wet sites and may colonize naturally along streams and in wetlands. Tristis is the most hardy cultivar. Cytospora canker on upland sites. Height to 60 ft.

(1) **Shade Tolerance** - adaptation for underplantings (H = high, M = medium, L = low)

(2) **Flood Tolerance** - relative value in riparian locations (H = high tolerance of frequent Flood with poor drainage, M - medium tolerance to Flood and needs good drainage, L = low tolerance of Flood)

(3) **Wildlife Value - Use Groups:** SM = small mammals, LM = large mammals, SB = song birds, GB = game birds, MB = moths/butterflies; Function: F = food, C = cover, B = both; Rating: H = high value on a long-term use, M = high value on a seasonal basis, L = value on a limited, short-term basis; Season when food is available: Sp = Spring, Su = Summer, F = Fall, W = Winter

(4) **Windbreak Density** - Summer = comparable protection from wind; Winter = comparable protection from wind and snow drifting; H = high, M = medium, L = low

(5) **Products** - C = Christmas trees, P = posts, S = shavings, L = lumber, F = firewood, B = biomass, E1 = edible directly off the plant, E2 = edible if processed

(6) **Root Suckering** - comparable aggressiveness to root sprout, N = No, Y = Yes

(7) **Comments** - check with your local forester or natural resource professional for other possible considerations

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					Use Groups	Function	Rating	Season	Summer	Winter			
Antelope Bitterbrush (<i>Purshia tridentate</i>)	PUTR2	I	L	L	LM SM	B	H	F/W	M	L		N	Excellent big game browse species and small mammals eat seeds. Height to 3 ft.
Blackhaw, Rusty (<i>Viburnum rufidulum</i>)	VIRU	N	L	L	SB GB	B	H	F	H	M	E1	Y	Habit: shrub, tree, open, irregular, May blossoms, autumn fruits reddish, becoming black, sweet and edible. Drought tolerant in zone 5, pH 5.5-7.0. Use: wildlife habitat, windbreak. Height to 30 ft.
Buffaloberry, Silver (<i>Shepherdia argentea</i>)	SHAR	I, II, III	L	M	SB GB	B	H	F/W	H	M	E1, E2	Y	Thorny shrub with red-orange fruit. Cold and drought hardy. Minimum spacing 5x5; can be planted in coarse and medium soils. Height 10-12 ft.
Buttonbush (<i>Cephalanthus occidentalis</i>)	CEOC2	IV	L	H	GB	B	L	F	M	L		Y	Recommended only in southeast Nebraska. Seeds eaten by waterfowl. Prefers moist sites. Minimum spacing is 4x4; can be planted in coarse, medium and fine soils. Height 8-12 ft.
Cherry, Nanking (<i>Prunus tomentosa</i>)	PRTO80	N	L	L	SB SM	B	M	Su	M	L	E1, E2	N	Short-lived <10 years. Early fruit producer of sweet cherries. Minimum spacing 6x6; can be planted in coarse and medium soils. Height 5-7 ft.
Chokeberry, Black (<i>Aronia melanocarpa</i>)	PHME13	N	L	L	SB LM	B	H	F/W	M	L		Y	Blackish purple fruits persist into winter. Minimum spacing 4x4; can be planted in coarse, medium and fine soils. Height 3-8 ft
Chokecherry, Common (<i>Prunus virginiana</i>)	PRVI	I, II, III, IV	M	M	SB GB	B	H	Su	H	M	E1, E2	Y	Red fall leaf color. Small dark fruit is bitter without processing. Minimum spacing 4x4; can be planted in coarse, medium and fine soils. Height 8-14 ft.
Coralberry (<i>Symphoricarpos orbiculatus</i>)	SYOR	III, IV	M	M	SB SM	B	H	F/W	M	L		Y	Reddish-pink berries persist into winter. Height 3 ft.
Cotoneaster, Peking (<i>Cotoneaster acutifolia</i>)	COAC2	N	L	M	MB SB	B	M	F/W	H	M		N	Fire blight possible problem. Minimum spacing 5x5; can be planted in coarse, medium and fine soils. Height 5-10 ft.
Cranberry, American or Highbush (<i>Viburnum trilobum</i>)	VITR8	N	M	M	SB	B	M	F/W	H	M	E2	N	Bright red berries persist into winter. Makes ruby red jelly/jam. Minimum spacing 6x6; can be planted in coarse, medium and fine soils. Height 10-12 ft.
Currant, Buffalo (<i>Ribes odoratum</i>)	RIAUV	I, II, III, IV	M	L	SB SM	B	M	Su	H	M	E1, E2	Y	Adapted to a variety of sites. Minimum spacing 5x5; can be planted in medium soils. Height 4-6 ft.
Currant, Golden (<i>Ribes aureum</i>)	RIAU	I, II, III, IV	M	L	SB SM	B	M	Su	H	M	E1, E2	Y	Adapted to a variety of sites. Minimum spacing 5x5; can be planted in medium soils. Buffalo currant (<i>Ribes odoratum</i>) is a closely related species. Height 4-6 ft.
Dogwood, Gray (<i>Cornus racemosa</i>)	CORA6	III, IV	H	H	SB	B	H	Su/F	H	M		Y	Understory shrub that grows in full shade to sun. Suckers to form thickets. Minimum spacing 3x3; can be planted in coarse, medium and fine soils. understory shrub. Height 6-10 ft.
Dogwood, Redosier (<i>Cornus sericea</i>)	COSE16	I, II, III, IV	M	H	SB LM	B	H	F/W	M	L		Y	Red stems in winter. Good riparian buffer species. Provides browse for big game. Minimum spacing 4x4; can be planted in coarse, medium and fine soils. Height 8-10 ft.
Elderberry (<i>Sambucus canadensis</i>)	SANIC4	III, IV	L	H	MB SB	F	M	Su	H	M	E1, E2	Y	Prefers moist sites. Root sprouts readily; leaves and stems may be toxic. Minimum spacing 5x5; can be planted in medium soils. Height 4-8 ft.

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					Use Groups	Function	Rating	Season	Summer	Winter			
Euonymus, Winterberry (<i>Euonymus bungeanus</i>)	EUBU5	N	M	M	SB	B	L	F/W	M	L	E1	N	Large shrub-small tree form. Bright orange-red seeds in the fall. Cultivar released by Manhattan PMC. Height to 20 ft.
Hazelnut, American (<i>Corylus americana</i>)	COAM3	IV	M	M	SB SM	B	H	F	M	L	E1	Y	Susceptible to canker. Nuts enclosed in downy bracts. Minimum spacing 5x5; can be planted in medium and fine soils. Height 6-10 ft.
Indigo, Desert False (<i>Amorpha fruticosa</i>)	AMFR	II, III, IV	L	H	SB	C	L	N/A	M	L		Y	Legume with seed pod. Native along riparian areas and prefers moist soils. Minimum spacing 4x4; can be planted in coarse, medium and fine soils. Height 5-10 ft.
Juniper, Common (<i>Juniperus communis</i>)	JUCO6	I, II	M	L	SM SB	B	M	F/W	M	M		N	Evergreen shrub to small tree. Numerous varieties in several forms (prostrate to upright). Certain varieties subject to bagworms, cercospora. Available from Lawyer Nursery, MT (unknown variety or seed source). Height 3 to 15 ft.
Lilac (<i>Syringa vulgaris</i>)	SYVU	N	L	L	SB MB	B	M	Su	H	M		Y	Hardy shrub. Purple flowers result in persistent seed capsule. Powdery mildew a potential problem. Minimum spacing 6x6; can be planted in coarse, medium and fine soils. Height 6-10 ft.
Mahogany, Mountain (<i>Cercocarpus montanus</i>)	CEMOM4	I	L	L	LM	F	H	F/W	M	L		N	Excellent big game browse species. Plumose fruits persist into winter. Drought tolerant. Height 5-10 ft.
Nannyberry (<i>Viburnum lentago</i>)	VILE	III, IV	M	M	SB	B	H	Su	M	L		Y	Small tree or large shrub form. Good for wildlife habitat or windbreaks; drought tolerant; may be confused with Black Haw (<i>Viburnum rufidulum</i>). Height to 25 ft.
Peashrub, Siberian (<i>Caragana aborescens</i>)	CAAR18	N	L	L	SB	F	L	F	H	M	B	Y	Legume. Cold and drought hardy. Effective windbreak species. Readily defoliated by grasshoppers. Minimum spacing 5x5; can be planted in medium and fine soils. Height 8-12 ft.
Plum, American (<i>Prunus americana</i>)	PRAM	I, II, III, IV	M	M	GB SB	B	H	Su	H	M	E1, E2	Y	Medium pink-red fruits. Widely adapted. Suckers to make dense thickets. Minimum spacing for wildlife 2x2; can be planted in coarse and medium soils. Height 8-12 ft.
Rose, Arkansas (<i>Rosa arkansana</i>)	ROAR3	I, II, III, IV	L	L	GB SB	B	H	F/W	L	L	E2	Y	Also called prairie rose. Height to 2 ft.
Rose, Hansen Hedge (<i>Rosa sp.</i>); (<i>Rosa rugosa</i> x <i>R. woodsii</i>)	ROWOHH	N	L	L	SB MB	B	H	F/W	M	L		Y	Woods or Arkansas Rose preferred on unaltered habitats. Origin might be SDSU selection of <i>Rosa rugosa</i> x <i>Rosa woodsii</i> . Height to 6 ft.
Rose, Woods (<i>Rosa woodsii</i>)	ROWO	I, II, III	L	L	GB SB	B	H	F/W	M	L	E2	Y	Preferred winter food for prairie grouse. Available through some NRDs. Height to 5 ft.
Sagebrush, Big (<i>Artemisia tridentata</i>)	ARTR2	I	L	L	LM SM	B	H	F/W	M	L		N	Excellent big game browse species - maintains leaves in winter for high protein diet. Provides big game fawning habitat. Rodents eat seeds. Height 3-6 ft.
Sagebrush, Silver (<i>Artemisia cana</i>)	ARCA13	I	L	L	LM	B	H	F/W	M	L		N	Excellent big game browse species. Provides cover for big game fawning habitat. Height 2-5 ft.

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					Use Groups	Function	Rating	Season	Summer	Winter			
Saltbush, Fourwing (<i>Atriplex canescens</i>)	ATCA2	I	L	L	LM SM	B	M	F/W	M	L		N	Maintains leaves in winter. Seeds are persistent. Limit use to high pH and alkaline soils. Height to 2-5 ft.
Sandcherry, Western (<i>Prunus besseyi</i>)	PRPUB	I, II, III	L	L	GB SB SM	F	M	Su	M	L	E1, E2	Y	Early fruit producer of dark sweet cherries. Minimum spacing for wildlife 2x2; can be planted in coarse and medium soils. Height 4-6 ft.
Serviceberry, Saskatoon (<i>Amelanchier alnifolia</i>)	AMAL2	I, II, III	H	M	SB LM	B	H	Su	H	M	E1, E2	Y	Native to northern Nebraska. Produces near black, edible fruit. Minimum spacing 5x5; can be planted in coarse, medium, and fine soils. Height 6-12 ft.
Snowberry, Common (<i>Symphoricarpos albus</i>)	SYAL	III, IV	M	M	SB SM	B	H	F/W	M	L		Y	Whitish berries persist into winter. Western snowberry (<i>Symphoricarpos occidentalis</i>) is a very similar species native to Vegetative Zones I, II, III and IV. Used for windbreaks and wildlife habitat. Height 2-3 ft.
Snowberry, Western (<i>Symphoricarpos occidentalis</i>)	SYOC	I, II, III, IV	M	M	SB SM	B	H	F/W	M	L		Y	Potential to spread in rangeland. Whitish berries persist into winter. Common snowberry (<i>Symphoricarpos albus</i>) is a very similar species native to Vegetative Zones III and IV. Used for windbreaks and wildlife habitat. Height 2-3 ft.
Sumac, Skunkbush (<i>Rhus trilobata</i>) Recommended cultivars: Big horn, Konza fragrant	RHTR	I, II, III, IV	L	L	SM SB	B	M	F/W	M	L		N	Good red fall foliage. Leaves have pungent odor. Red fuzzy seed is persistent and not consumed widely by wildlife. Minimum spacing 4x4; can be planted in coarse and medium soils. Height 4-8 ft.
Willow, Sandbar (<i>Salix exigua</i>) Interior Rowlee	SAIN3	I, II, III, IV	M	H	LM SB	C	M	N/A	H	M	B	Y	Excellent riparian buffer species. Controls streambank erosion and provides wildlife cover. Height to 15 ft.

(1) **Shade Tolerance** - adaptation for underplantings (H = high, M = medium, L = low)

(2) **Flood Tolerance** - relative value in riparian locations (H = high tolerance of frequent Flood with poor drainage, M - medium tolerance to Flood and needs good drainage, L = low tolerance of Flood)

(3) **Wildlife Value - Use Groups:** SM = small mammals, LM = large mammals, SB = song birds, GB = game birds, MB = moths/butterflies; Function: F = food, C = cover, B = both; Rating: H = high value on a long-term use, M = high value on a seasonal basis, L = value on a limited, short-term basis; Season when food is available: Sp = Spring, Su = Summer, F = Fall, W = Winter, N/A = Not Applicable

(4) **Windbreak Density** - Summer = comparable protection from wind; Winter = comparable protection from wind and snow drifting; H = high, M = medium, L = low

(5) **Products** - C = Christmas trees, P = posts, S = shavings, L = lumber, F = firewood, B = biomass, E1 = edible directly off the plant, E2 = edible if processed

(6) **Root Suckering** - comparable aggressiveness to root sprout, N = No, Y = Yes

(7) **Comments** - check with your local forester or natural resource professional for other possible considerations

Primary References

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