

S O I L - W I N D B R E A K  
I N T E R P R E T A T I O N S  
F O R W Y O M I N G

SOIL CONSERVATION SERVICE  
WYOMING

(REVISED FEBRUARY 1989)

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Precipitation Subgroup.

## I N T R O D U C T I O N

Each tree or shrub species has certain climatic and physiographic limits. Within these parameters a tree may be well or poorly suited because of soil characteristics. These windbreak suitability groups have been developed by considering individual species performance under specified conditions of soil, climate, physiography, and management, including species, spacing, and arrangement.

Windbreak suitability groups are your guide for selecting species best suited for different kinds of soils and for predicting height growth and effectiveness. They may be used to select plants for windbreaks, recreation and wildlife plantings, and ornamental or environmental plantings.

All soil(s) mapped in the state have been placed in 14 groups of similar soils. All groups are further divided into moisture subgroups. Care must be taken to ensure that subgroups are considered when selecting species suitability and performance. To determine the proper "moisture subgroup," refer to your local mean annual precipitation map.

The tree and shrub heights listed in the table of each Windbreak Suitability Group are the average heights that the various plants are expected to reach in 20 years after planting. A high level of maintenance is assumed; i.e., no damage from livestock, equipment, or pesticides and little or no competition from grass and weeds.

DESCRIPTIONS OF WINDBREAK  
SOIL SUITABILITY GROUPS

DESCRIPTIONS OF WINDBREAK SUITABILITY GROUPS FOR WYOMING

GROUP

SOIL DESCRIPTION

- 1 Soils in this group are loamy, have less than 35% clay content, and are subject to frequent flooding (run-in) or a seasonal water table. The upper 12 inches lack free carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Spring planting may be delayed for a short period because of soil wetness. Competition from weeds and grass is a primary concern in establishment of trees and shrubs.
- 1K Soils in this group are loamy, have less than 35% clay content, and subject to frequent flooding (run-in) or a seasonal high water table. In the upper 12 inches, they have free carbonates, a pH of 7.8 to 9.0, or have an electrical conductivity (EC) of less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Spring planting may be delayed for a short period because of soil wetness. Competition from weeds and grass is a primary concern in establishment of trees and shrubs. Free carbonates, high pH, and a slight EC affect the selection and growth of species.
- 3 Soils in this group are loamy, have less than 35% clay content and are moderately well or well drained and clayey soils with a loamy surface mantle greater than 20 inches. Available water capacity (AWC) is high. In the upper 12 inches, they lack free carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are well suited for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a principal concern in the establishment of trees and shrubs.
- 4 Soils in this group are clayey with an 8 to 20 inch loamy surface mantle and are somewhat poorly, moderately well, or well drained. Soils in this group are suited for farmstead, feedlot, and field windbreaks. High clay content below the surface mantle affects the selection and growth of tree and shrub species. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs.
- 4C Soils in this group have greater than 35% clay content throughout when mixed to 8 inches and are somewhat poorly, moderately well, or well drained. Soils in this group are suited for farmstead, feedlot, and field windbreaks. High clay content affects the selection and growth of trees and shrubs. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs. Because of high clay content, extra care will need to be exercised to make sure soil is firmly packed around roots after planting.
- 5 Soils in this group are loamy with a moderate available water capacity. They are moderately well to well drained. In the upper 12 inches, they lack free carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a primary concern in establishment and management of trees and shrubs.

GROUPSoil Description

- 5K Soils in this group are loamy with a moderate available water capacity. They are moderately well or well drained. In the upper 12 inches, they have free carbonates, a pH of 7.8 to 9.0, or have an electrical conductivity (EC) of less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Free carbonates and a high pH in the upper 12 inches affect the selection on tree and shrub species. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs.
- 6G Soils in this group are loamy-skeletal and sandy-skeletal, and moderately well to excessively drained. Available water capacity is very low. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs. The very low AWC affects the selection and growth of trees and shrubs.
- 6R Soils in this group are moderately deep over bedrock. Available water capacities are very low to moderate. Soils in this group are suited for farmstead, feedlot, and field windbreaks. The very low to moderate AWC affects the selection and growth of tree and shrub species. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs.
- 7 Soils in this group are deep and sandy throughout. Soils in this group are poorly suited to farmstead, feedlot, and field windbreaks. A very low to moderate available water capacity affects the selection, health, and growth of trees and shrubs. Soil blowing at or near the planting site can adversely affect the health and vigor of developing windbreaks. Optimum growth and survival are not expected.
- 8 Soils in this group are loamy with a high available water capacity. They are moderately well or well drained. In the upper 12 inches, they have free carbonates, have a pH of 7.8 to 9.0, or have an EC of less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Free carbonates and a high pH affect the selection and growth of trees and shrubs. Competition from grass and weeds is a primary concern for establishment and management of trees and shrubs.
- 9G Soils in this group are deep with a water table within 5 feet of the surface; some are subject to flooding or ponding. In the upper 12 inches, they have a pH of greater than 7.8 and an EC of 4 to 16 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. High pH and low to moderate EC in the upper 12 inches affect the selection and growth of trees and shrubs. Competition from grass and weeds is a primary concern for establishment and management of trees and shrubs. Spring planting may be delayed for a short period because of soil wetness.

GROUP

Soil Description

- 9N Soils in this group are deep, do not have a water table within 5 feet of the surface, and are not subject to flooding or ponding. In the upper 12 inches, they have a pH of greater than 7.8 and an EC of 4 to 16 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. High pH and competition from grass and weeds are primary concerns for establishment and management of trees and shrubs.
- 10 Soils in this group have one or more characteristics which severely limit planting, survival, or growth of trees and shrubs. Examples include shallow and very shallow soils, soils with a very low available water capacity, poorly and very poorly drained soils that are saturated or ponded throughout the growing season, and toxic soils. Soils in this group are usually not recommended for farmstead, feedlot, and field windbreaks. However, onsite investigations may reveal that some tree and shrub plantings can be made with special treatments. The selection of species must be tailored to the soil conditions existing at the altered site.

W I N D B R E A K   S U I T A B I L I T Y   G R O U P S

Windbreak Suitability Groups - FOTG

WINDBREAK SUITABILITY GROUPS  
FOR SOIL SERIES USED IN WYOMING

<u>SOIL SERIES</u>	<u>SG</u>	<u>PZ</u>	<u>SOIL SURVEYS</u>	<u>SG</u>	<u>PZ</u>	<u>SOIL SURVEYS</u>	<u>SG</u>	<u>PZ</u>
Abarca	6G		Asholler	10		Benin	9N	
Aberone	6G		Asperson	6R		Benz	9N	
Abra	8		Assinniboine	5		Bessemer	4C	
Absher	9N		Attewan	6G		Bidman	3	
Absted	10		Auzqui	8		Big Horn	3	
Abston	9N		Avalon	8		Bigwin	9G	
Adel	3		Bachus	6R		Bigwinder	1K	
Adilis	6G		Badgerton	6G		Billycreek	6R	
Agneston	6G		Badwater	6G		Binton	9N	
Albinas	3		Baggot	10		Birdsley	10	
Alcova	6G		Bahl	4C		Blackdraw	4C	
Alflack	6R		Baldock	8		Blackhall	10	
Alice	5		Balon	3		Blaine	6R	
Almy	9N		Bankard	1K		Blazon	10	
Alred	6G		Banks	7		Bluerim	6R	
Altvan	6G		Barcus	6G		Bodorumpe	6R	
Amesmont	6R		Barnum	9N		Boettcher	6R	
Amodac	8		Baroid	1K		Boltus	10	
Amsden	3		Barrett	10		Bondman	10	
Anasazi	5K		Bateson	6G		Bone	9N	
Animas	6R		Baux	10		Boneek	3	
Ansel	3		Bauxson	10		Bordeaux	8	
Anselmo	5		Bayard	5K		Bosler	6G	
Apeldorn	1K		Bayerton	6R		Bottle	6R	
Apron	5K		Beamton	6R		Boulder	6G	
Archin	8		Bear Lake	9G		Bowbac	6R	
Ard	8		Bearmouth	6G		Bowen	6R	
Arvada	9N		Beaverton	6G		Boyle	10	
Ascalon	3		Becks	1K		Boysen	9N	
Ashbon	10		Beenom	10		Bozeman	3	

SG - Suitability Grouping  
PZ - Planting Zone

Windbreak Suitability Groups - FOTG

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FOR SOIL SERIES USED IN WYOMING

<u>SOIL SERIES</u>	<u>SG</u>	<u>PZ</u>	<u>SOIL SURVEYS</u>	<u>SG</u>	<u>PZ</u>	<u>SOIL SURVEYS</u>	<u>SG</u>	<u>PZ</u>
Bributte	10		Castello	6G		Cohill	6G	
Bridger	4C		Castino	6R		Colby	8	
Bridget	3		Castner	10		Colombo	8	
Briggsdale	6R		Cathedral	10		Colnevee	8	
Brokenhorn	8		Cavegulch	8		Colsavage	4G	
Bross	10		Cerrillos	8		Comer	5	
Brownrigg	10		Cestnik	4C		Connerton	8	
Brownsto	6G		Chalkcreek	8		Conpeak	10	
Brusset	3		Chaperton	6R		Contide	3	
Buckle	8		Chappell	5K		Copeman	6G	
Buckskin	4		Charlos	6G		Cora	1	
Buffcreek	6G		Cheyenne	6G		Cordeston	3	
Bufffork	6R		Chincap	6R		Corlett	7	
Burgess	10		Chipeta	10		Corpening	10	
Burnette	3		Chipendale	8		Cotha	6R	
Burnt Lake	6G		Chipenhill	10		Cotopaxi	7	
Busher	3		Chittum	10		Countryman	1K	
Bushman	5K		Chrisman	4C		Coutis	6G	
Butche	10		Cific	6R		Cowdrey	4	
Bynum	6R		Cimarron	8		Crago	6G	
Byrnie	10		Citadel	3		Cragola	10	
Cabin	6G		Clapper	3		Cragosen	10	
Cadoma	9N		Clarkelen	5K		Creighton	3	
Calicott	6G		Clayburn	5		Crestman	10	
Cambarge	6G		Clifsand	6G		Crow Creek	3	
Cambria	8		Clifterson	6G		Crowheart	9G	
Canburn	1K		Cloud Peak	6R		Crownest	10	
Canwell	6R		Clowers	1K		Cryhula	6R	
Carmody	6R		Coaldraw	10		Cundick	10	
Carnero	6R		Coalmont	6R		Curecanti	6G	

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PZ - Planting Zone

Windbreak Suitability Groups - FOTG

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<u>SOIL SERIES</u>	<u>SG</u>	<u>PZ</u>	<u>SOIL SURVEYS</u>	<u>SG</u>	<u>PZ</u>	<u>SOIL SURVEYS</u>	<u>SG</u>	<u>PZ</u>
Curtis Siding	7		Driggs	6G		Feltner	10	
Cushman	6R		Duffson	6R		Feltonia	6G	
Cushool	6R		Duncom	10		Fergus	8	
Dahlquist	6G		Dunday	7		Finnerty	4C	
Dailey	7		Duroc	3		Five Mile	8	
Daleweek	1		Dwyer	7		Fiveoh	5K	
Danko	10		Echemoor	6R		Fluetsch	8	
Darvey	8		Edlin	5K		Forelle	8	
Deaver	4C		Effington	9N		Forkwood	8	
Debone	9N		El Rancho	8		Fornor	6G	
Decolney	5K		Elk Hollow	6G		Fort Collins	3	
Decross	3		Elk Mountain	6R		Fossilon	10	
Dell	6R		Elkol	9N		Fourlog	1	
Delphill	6R		Ellicott	5		Fourmile	6G	
Delplain	10		Emblem	6G		Foxcreek	1	
Delpoint	6R		Embry	5		Foxtton	6R	
Demar	6R		Emigrant	6R		Fraddle	3	
Dempsey	5		Englewood	4C		Frazerton	4C	
Devoe	10		Enos	6R		Frisco	6G	
Diamondville	6R		Epping	10		Frisite	8	
Dilman	1		Ethete	6G		Frontier	10	
Dinco	9N		Evanston	3		Fruita	8	
Dines	9N		Eyre	10		Furniss	1	
Docpar	8		Fairdale	8		Gaddes	3	
Domes	9N		Farlow	6G		Garland	6G	
Dipman	1		Farisita	10		Garrett	3	
Dix	6G		Farson	6G		Garsid	6R	
Dobent	1K		Fattig	6R		Garza	3	
Dobrow	6G		Featherlegs	5		Gas Creek	1	
Draknab	5K		Felt	6G		Gateridge	10	

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Gateson	6R		Handran	6G		Hooper	9N	
Gaynor	4C		Hanson	6G		Hoot	10	
Gelkie	6G		Hapjack	10		Horsley	10	
Gering	1K		Hapney	9G		Hub	3	
Glassner	4C		Hargreave	6R		Huffine	6G	
Glenberg	1K		Harlan	3		Huguston	10	
Glenderson	5K		Hatermus	10		Hutt	4C	
Glendive	1K		Haterton	10		Hyattville	6R	
Glenton	5K		Haverdad	8		Hyshot	8	
Goshen	3		Havermom	9N		Iceslew	1K	
Goslin	6G		Haverson	1		Inchau	6R	
Granile	6G		Havre	1K		Indart	6R	
Greenman	6R		Hawksprings	6G		Irigul	10	
Greyback	6G		Hawkstone	5		Irson	10	
Greybull	6R		Hazton	10		Janise	10	
Greys	3		Hechtman	10		Jayem	5	
Grieves	5K		Heinsaw	5K		Jenkinson	10	
Griffy	6G		Heldt	4C		Joemre	7	
Grimm	6G		Henrysfork	9G		Judkins	6G	
Grimstone	6R		Herbman	10		Julesburg	5	
Grizzly	6G		Hermering	6G		Kadoka	6R	
Grobutte	6G		Hernandes	8		Kandaly	7	
Grummit	10		Hickey	8		Kappes	6R	
Gunbarrel	1K		Higgins	1K		Kather	6R	
Gunsone	4C		Highpoint	10		Keeline	5K	
Gypnevee	8		Hiland	5K		Keith	3	
Gystrum	9N		Hilight	10		Kemmerer	6R	
Hagerman	6R		Hobacker	6G		Keota	6R	
Hagga	1K		Holderness	4		Keyner	9N	
Hamlet	8		Hoodle	6G		Kezar	6R	

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Kim	8		Las Animas	1K		Manter	5	
Kinnear	8		Lassel	5K		Marias	4C	
Kirkham	1K		Laurel	9G		Marshdale	1	
Kirtley	6R		Lazear	10		Mathers	6G	
Kishona	8		Leavitt	3		Mayoworth	6R	
Kitchell	6G		Leavittville	6G		Maysdorf	8	
Koonich	5		Leighcan	6G		McCaffery	7	
Korchea	8		Libeg	6G		McCook	1	
Kovich	1		Limon	4C		McCort	6G	
Kuma	3		Lininger	6R		McFadden	5K	
Kyle	4C		Littlebear	7		McKinney	1K	
La Fonda	8		Littsan	6R		McRae	8	
Labou	10		Lohmiller	4C		Meadowlake	6R	
Lachapella	1K		Lohsman	9N		Means	6R	
Laclede	8		Lolak	9G		Meeteetse	9N	
Lail	4		Lolite	10		Menbar	1K	
Lake Creek	6R		Lonebear	8		Merden	1K	
Lakehelen	6R		Los Alamos	6G		Merna	9N	
Lakoa	3		Lostwells	8		Michelson	6G	
Lamarsh	6R		Louviers	10		Middlewood	10	
Lambman	10		Loveland	1K		Midelight	6G	
Lander	1K		Lucky Star	6G		Midfork	6G	
Landy	9N		Luhon	8		Midway	10	
Lantis	6G		Lupinto	6G		Mikesell	4	
Lantonia	3		Lymanson	6R		Millburne	6G	
Laport	10		Lynx	3		Millerlake	8	
Lardel	9G		Maggin	6R		Millpot	6G	
Larim	6G		Maitland	3		Milren	8	
Larimer	6G		MacFarlane	6G		Mine	5	
Larkson	3		Manburn	10		Miracle	6R	

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PZ - Planting Zone

Windbreak Suitability Groups - FOTG

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Mirror	6R		Nihill	6G		Paulson	3	
Mishak	8		Nilrap	4		Paunsaugunt	10	
Mitchell	8		Noden	3		Pavillion	6R	
Monbutte	8		Norka	3		Pena	6G	
Monte	8		Norkool	3		Pensore	10	
Moran	6G		Norte	9G		Pepal	5K	
Moret	10		Notal	4C		Pepton	10	
Morling	10		Nucla	8		Perceton	6G	
Morset	8		Nunn	4C		Perma	6G	
Moslander	1K		Nunnston	4		Persayo	10	
Mosroc	10		Oceanet	10		Pesmo	6R	
Motoqua	10		Olney	3		Pesmore	6R	
Moyerson	10		Onason	10		Peso	6R	
Mudray	10		Onita	3		Pesowyo	6R	
Muff	9N		Orella	10		Petrie	9N	
Mughouse	6R		Orpha	7		Peyton	3	
Mughut	6R		Osmund	6G		Phiferson	6R	
Mulgon	6G		Otero	5K		Pilotpeak	10	
Mundos	6G		Otterson	5K		Pinedale	6G	
Narrows	1K		Ouard	10		Pinequest	6G	
Nathale	6R		Outlet	1		Pinelli	8	
Nathrop	6R		Owen Creek	6R		Pishkun	6G	
Naturita	6G		Owlcan	6G		Pokeman	6R	
Nieber	6R		Pagosa	4		Poker	6R	
Neldore	10		Palmer Canyon	6G		Popshia	9N	
Nelson	6R		Pancheri	8		Popshiu	8	
Nevee	8		Parlin	6G		Potts	8	
Neville	8		Parmleed	6R		Preatorson	6G	
Newfork	1		Passcreek	6R		Prow	10	
Nielsen	10		Patent	8		Pugsley	6R	

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PZ - Planting Zone

Windbreak Suitability Groups - FOTG

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Quander	6G		Rekop	10		Saddle	6R	
Quealman	1K		Relsob	5		Sagecreek	8	
Quealy	10		Rencalson	6R		Samday	10	
Querc	6R		Rencot	10		Samoist	10	
Rairdent	9N		Rennie	1		Samsil	10	
Rallod	10		Renohill	6R		Sandbranch	9N	
Rammel	6R		Rentsac	10		Sanford	6R	
Randman	6G		Ret	3		Santana	10	
Rauzi	5		Rhoame	4C		Sapphire	6R	
Ravolli	8		Rhoamette	4C		Satanka	6R	
Rawlins	8		Richvale	3		Satanta	3	
Raynesford	8		Rickman	6R		Savageton	6R	
Razor	6R		Ridgecrest	6R		Sawcreek	6R	
Razsun	8		Rimton	6R		Sayles	9N	
Recluse	3		Rin	3		Schooner	10	
Redarrow	10		Ririe	3		Scout	6G	
Redbank	5K		Ritz	1K		Scravo	6G	
Redbow	6R		Rivra	6G		Sear	10	
Redcreek	10		Robana	3		Seaverson	10	
Reddale	6G		Rockinchair	6R		Sebud	6G	
Redfeather	10		Rock River	5		Seedskadee	10	
Redlodge	1K		Rogert	6G		Shanta	3	
Redmanson	6G		Rooset	6G		Sharland	6G	
Redrob	6G		Rosane	1		Shavano	6R	
Redsun	10		Rosebud	6R		Sheege	10	
Redspear	10		Roughlock	8		Shellcreek	9N	
Redwash	10		Routt	3		Shinbara	10	
Reeder	6R		Roxal	10		Shingle	10	
Regnaps	6R		Ryan Park	5K		Shirk	6R	
Reicess	3		Ryark	7		Shoshone	9G	

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PZ - Planting Zone

Windbreak Suitability Groups - FOTG

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Shrine	8		Sublette	5		Threetop	6R	
Shumway	4C		Sugakool	3		Tignon	10	
Silas	1K		Sugardee	6G		Tilford	3	
Silhouette	4C		Suglo	5K		Tine	6G	
Sili	4C		Sunburst	4C		Tineman	6G	
Simmont	6R		Sunup	10		Tipper	6R	
Sinkson	8		Swift Creek	6G		Tipperary	7	
Slipman	6G		Taglake	6G		Tisdale	10	
Slocum	1		Taluce	10		Tisworth	9N	
Sneffels	6R		Tassel	10		Tolman	10	
Snomo	4C		Tasselman	10		Tongue River	6R	
Sobson	6R		Teagulf	6R		Topeman	9N	
Southace	6G		Teapo	6R		Torchlight	9N	
Southfork	10		Teeler	6G		Travessilla	10	
Space City	7		Teemat	6G		Travson	10	
Spangler	6R		Teewinot	10		Trelona	10	
Spearfish	10		Telcan	7		Tresano	8	
Spearhead	6G		Tellman	6G		Tripit	6R	
Spenlo	8		Tenorio	6G		Trook	5K	
Splitro	10		Tensleep	8		Troutville	6G	
Spool	10		Tepete	1		Trump	10	
Starley	10		Terada	6R		Tullock	7	
Starman	10		Terro	6R		Turk	4C	
Stetter	4C		Terry	6R		Turnback	6R	
Stoneham	3		Tetonia	3		Turnercrest	6R	
Stormitt	6G		Tetonville	1K		Turnerville	3	
Stovho	3		Thayne	6G		Turson	1K	
Stubbs	6R		Thedalund	6R		Twin Creek	3	
Stunner	4		Theedle	6R		Twotop	4C	
Stutzman	4C		Thermopolis	10		Uffens	9N	

SG - Suitability Grouping  
PZ - Planting Zone

Windbreak Suitability Groups - FOTG

WINDBREAK SUITABILITY GROUPS  
FOR SOIL SERIES USED IN WYOMING

<u>SOIL SERIES</u>	<u>SG</u>	<u>PZ</u>	<u>SOIL SURVEYS</u>	<u>SG</u>	<u>PZ</u>	<u>SOIL SURVEYS</u>	<u>SG</u>	<u>PZ</u>
Uhl	3		Weld	3		Wrenman	6R	
Uinta	5		Wellsville	8		Wyarno	4C	
Ulm	4		Welring	10		Wycols	6R	
Ulrant	3		Wendover	10		Yamac	8	
Ulric	6R		Westplain	1K		Yetull	7	
Ulysses	3		Westvaco	9N		Youga	3	
Unson	6G		Wetterhorn	6R		Youjay	10	
Vabem	10		Whaley	10		Youngston	8	
Vale	3		Whiteriver	3		Zeomont	7	
Valent	7		Wibaux	10		Zeona	7	
Valentine	7		Wiggleton	6G		Zigweid	8	
Valleono	6G		Willow Creek	3		Zillman	6G	
Vanda	4C		Willowman	6G		Zohner	1K	
Vanocker	6G		Willwood	6G		Zufelt	1	
Vassett	3		Wilsonville	1K		Zundell	1K	
Vena Pass	1		Winkleman	4C				
Vetal	5		Winler	4C				
Vible	7		Winn	1K				
Virkula	3		Wiscow	10				
Vona	5		Wolf	6G				
Vonalee	5		Woodrock	6R				
Vonason	7		Woosley	6R				
Vonet	5		Worf	10				
Wages	3		Worfka	10				
Walcott	6G		Worfman	10				
Walden	1K		Worfstone	10				
Wall	7		Work	4C				
Wallrock	5		Worland	6R				
Wallson	5K		Wormser	6R				
Waybe	10		Worthing	1				

SG - Suitability Grouping  
PZ - Planting Zone

DESCRIPTIONS OF  
PLANTING ZONES I, II, III

## DESCRIPTION OF PLANTING ZONES 1, 2, AND 3

Adaptability for planting trees and shrubs in Wyoming was based on each plant species' tolerance for the minimum and maximum air temperatures, soil temperatures of an area and data and observations collected from woody plant material trials and existing windbreaks. Planting zone definitions are presented below.

Planting Zone I Includes Major Land Resource Areas 32, 58B, 60A, 61, 64, 67.

Planting Zone I is in the mesic temperature zone. It includes areas of soils with a mean annual soil temperature from 47 degrees F. to 59 degrees F.

Planting Zone II Includes Major Land Resource Areas 33 and 34.

Planting Zone II is in the frigid temperature zone and is generally dry. It includes areas of soils with a mean annual soil temperature of less than 47 degrees F. and precipitation of less than 16 inches. In the winter this zone is characterized by frequent periods of cold, dry winds and soil surfaces that are frequently blown free of snow.

Planting Zone III Includes Major Land Resource Areas 43, 46, 47, 48A, 49, and 62.

Planting Zone III is in the frigid and cryic temperature zones. It includes areas of soils with a mean annual soil temperature of less than 47 degrees F. and precipitation of more than 10 inches. This zone is characterized by a snowpack throughout most of the winter.

ADAPTED  
TREE AND SHRUB SPECIES  
BY PLANTING ZONES

WINDBREAK GROUP 1

**Description and Limitations:** Soils in this group are loamy (35% clay content) and are subject to frequent flooding (run in) or a seasonal water table. The upper 12 inches lack free carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Spring planting may be delayed for a short period because of soil wetness. Competition from weeds and grass is a primary concern in establishment of trees and shrubs. Supplemental watering may be necessary for establishment.

ADAPTED SPECIES FOR WINDBREAK GROUP 1

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG
<b><u>Evergreen Coniferous Trees</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS	*16-18	19-20	21-24
Black Hills spruce	<i>Picea glauca densata</i>	NS	NS	*15-17	18-20	21-22
Blue spruce	<i>Picea pungens</i>	NS	*11-13	15-17	18-20	21-22
Eastern redcedar	<i>Juniperus virginiana</i>	NS	14-16	17-19	20-22	22-24
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*15-17	18-19	20-22	22-2k
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-12	13-16	17-19	20-22
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	*16-18	19-20	21-22
<b><u>Deciduous Trees</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS	*15-17	18-20	21-22
Golden willow	<i>Salix alba vitellina</i>	NS	*18-22	*23	26-30	31-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*13-15	16-20	21-25	26-30
Hackberry	<i>Cletus occidentalis</i>	NS	*13-15	16-20	21-23	24-28
Honeylocust	<i>Gleditsia triacanthos</i>	NS	14-16	17-21	22-25	26-30
Plains cottonwood	<i>Populus sargentii</i>	NS	26-30	*30-32	33-36	37-45
Siberian crabapple	<i>Malus baccata</i>	NS	*10-12	12-14	15-17	18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*19-21	22-26	27-30	31-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	*6-8	6-8	9-11
Basin big sagebrush	<i>Artemisia tridentata</i>	2-3	-	-	-	-
Common chokecherry	<i>Prunus virginiana</i>	NS	*6-9	*6-9	6-9	10-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3	-	-	-
Golden currant	<i>Ribes aureum</i>	NS	NS	*3-5	5-7	5-8
Greasewood	<i>Sarcobatus vermiculatus</i>	2-4	-	-	-	-
Hansen hedgerose	<i>Rosa rugosa</i>	NS	2-3	4-5	4-5	6-7
Lilac	<i>Syringa vulgaris</i>	NS	*4-6	7-8	8-9	10-11
Nanking cherry 1/	<i>Prunus tomentosa</i>	NS	*3-4	4-6	7-8	8-9
Peking cotoneaster	<i>Cotoneaster acutifolius</i>	NS	*3-4	5-6	7-8	9-10
Redosier dogwood	<i>Cornus stericea</i>	NS	NS	4-5	6-7	8-9

ADAPTED SPECIES FOR WINDBREAK GROUP 1

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	-	-	-	-
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS	*4-5	6-7	7-8
Siberian peashrub	<i>Caragana arborescens</i>	NS	6-8	9-10	11-12	13-15
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*7-8	9-10	11-13
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4	5-6	7-8	8-10
Tatarian honeysuck	<i>Lonicera tatarica</i>	NS	6-7	7-9	8-9	10-12
Western sandcherry <u>2/</u>	<i>Prunus pumila besseyi</i>	NS	2-3	3-4	3-4	3-4

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NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 1K

Description and Limitations: Soils in this group are loamy (35% clay content) and are subject to frequent flooding (run-in) or a seasonal high water table. In the upper 12 inches, they have free carbonates, have a pH of 7.8 to 9.0, or have an electrical conductivity (EC) of less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Spring planting may be delayed for a short period because of soil wetness. Competition from weeds and grass is a primary concern in establishment of trees and shrubs. Free carbonates, high pH, and a slight EC affect the selection and growth of species.

ADAPTED SPECIES FOR WINDBREAK GROUP 1K

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG
<b><u>Evergreen Coniferous Trees</u></b>						
Black Hills spruce	<i>Picea glauca densata</i>	NS	*14-16	17-18	19-20	21-23
Blue spruce	<i>Picea pungens</i>	NS	NS	15-17	18-20	21-23
Eastern redcedar	<i>Juniperus virginiana</i>	NS	14-16	17-18	19-20	21-23
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*15-17	18-19	20-21	22-25
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	9-11	12-16	17-19	20-22
<b><u>Deciduous Trees</u></b>						
Golden willow	<i>Salix alba vitellina</i>	NS	*18-22	*23-25	26-30	31-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*13-15	16-19	20-23	24-30
Hackberry	<i>Celtis</i>	NS	*13-15	*16-19	20-23	24-28
Honeylocust	<i>Gleditsia triacanthos</i>	NS	14-16	17-21	22-25	26-30
Plains cottonwood	<i>Populus sargentii</i>	NS	*26-30	*30-32	33-36	37-45
Siberian elm	<i>Ulmus pumila</i>	NS	*19-21	22-26	27-30	31-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	*6-8	6-8	9-11
Common chokecherry	<i>Prunus virginiana</i>	NS	*6-9	*6-9	6-9	10-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3	-	-	-
Greasewood	<i>Sarcobatus vermiculatus</i>	2-4	2-4	-	-	-
Lilac	<i>Syringa vulgaris</i>	NS	*4-6	*7-8	8-9	10-11
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	2-3	-	-	-
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-8	9-10	11-12	13-15
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*7-8	9-10	11-13
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4	5-6	7-8	8-10
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	5-7	8-9	8-9	10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

**WINDBREAK GROUP 2**

**Description and Limitations:** Soils in this group are artificially drained phases of poorly drained soil. The upper 12 inches lack free carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Spring planting may be delayed for a short period because of soil wetness. Competition from weeds and grass is a primary concern in establishment of trees and shrubs. Degree of wetness and drainage affect the selection of tree and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 2

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20  
 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP

COMMON NAME	SCIENTIFIC NAME	A	B	C	D	**PERM
		5-9"	10-14"	15-19"	20"+	IRRIG

**Evergreen Coniferous Trees:**

**Deciduous Trees:**

There are no soils in Wyoming in this group

**Shrubs:**

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

**WINDBREAK GROUP 2K**

**Description and Limitations:** Soils in this group are artificially drained phases of poorly and very poorly drained soils. The upper 12 inches has free carbonates, a pH of 7.8 to 9.0, and an electrical conductivity (EC) of less than 4mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Degree of wetness and drainage, free carbonates, a high pH, or a high EC will affect the selection and growth of trees or shrubs. Competition from weeds and grass is a primary concern. Spring planting may be delayed for a short period because of soil wetness.

ADAPTED SPECIES FOR WINDBREAK GROUP 2K

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A	B	C	D	**PERM IRRIG
		5-9"	10-14"	15-19"	20"+	

**Evergreen Coniferous Trees:**

**Deciduous Trees:**

There are no soils  
in Wyoming in this  
group

**Shrubs:**

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NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 3

**Description and Limitations:** Soils in this group are loamy (35% clay content) and are moderately well or well drained and clayey soils with a loamy surface mantle greater than 20 Inches. Available water capacity is high. In the upper 12 inches, they lack free carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are well suited for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a principal concern in the establishment of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 3

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG
<b><u>Evergreen Coniferous Trees:</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS	*15-17	18-20	21-24
Black Hills spruce	<i>Picea glauca densata</i>	NS	NS	*15-17	18-20	21-22
Blue spruce	<i>Picea pungens</i>	NS	NS	15-17	18-20	21-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	9-11	12-14	15-18	20-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	14-15	16-17	18-20	21-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-9	10-11	12-15	16-20
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	*14-16	17-18	19-22
<b><u>Deciduous Trees:</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS	NS	15-17	18-22
Golden willow	<i>Salix alba vitellina</i>	NS	NS	NS	NS	26-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*12-14	15-17	18-25	26-30
Hackberry	<i>Celtis</i>	NS	NS	*13-15	16-20	21-28
Honeylocust	<i>Gleditsia triacanthos</i>	NS	13-15	16-18	19-22	23-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	38-45
Siberian crabapple	<i>Malus baccata</i>	NS	NS	11-13	14-17	18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*17-19	20-26	27-30	31-36
<b><u>Shrubs:</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	*6-8	6-8	9-11
Basin big sagebrush	<i>Artemisia tridentata</i>	2-3	-	-	-	-
Common chokecherry	<i>Prunus virginiana</i>	NS	*6-7	*7-9	7-9	10-12
Fourwing saltbush	<i>Atriplex canescens</i>	NS	2-3	-	-	-
Golden currant	<i>Ribes aureum</i>	NS	NS	*3-5	3-5	5-7
Hansen hedgerose	<i>Rosa rugosa</i>	NS	3-4	4-5	5-6	5-7
Lilac	<i>Syringa vulgaris</i>	NS	4-6	7-8	8-9	10-11
Nanking cherry 1/	<i>Prunus tomentosa</i>	NS	*3-4	4-6	5-6	7-9
Peking cotoneaster	<i>Cotoneaster acutifolii</i>	NS	*3	4-5	5-6	6-10
Redosier dogwood	<i>Cornus sericea</i>	NS	NS	NS	6-7	8-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	-	-	-	-
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS	NS	4-5	5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	7-8	8-9	8-9	10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*7-8	8-9	10-13

WINDBREAK GROUP 3

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

Description and Limitations: Soils in this group are loamy (35% clay content) and are moderately well or well drained and clayey soils with a loamy surface mantle greater than 20 Inches. Available water capacity is high. In the upper 12 inches, they lack free carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are well suited for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a principal concern in the establishment of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 3

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG
Skunkbush sumac	Rhus trilobata	NS	3-4	5-6	7-8	8-10
Tatarlan honeysuckle	Lonicera tatarica	NS	5-6	7-8	8-9	10-12
Western sandcherry <u>2/</u>	Prunus pumila besseyi	NS	2-3	3-4	3-4	3-4

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NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 4

**Description and Limitations:** Soils in this group are clayey with an 8 to 20 inch loamy surface mantle and are somewhat poorly, moderately well, or well drained. Soils in this group are suited for farmstead, feedlot, and field windbreaks. High clay content below the surface mantle affects the selection and growth of tree and shrub species. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 4

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG
<b><u>Evergreen Coniferous Trees:</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS	14-16	17-20	21-24
Black Hills spruce	<i>Picea glauca densata</i>	NS	NS	NS	15-17	18-22
Blue spruce	<i>Picea pungens</i>	NS	NS	NS	15-17	18-22
Eastern redcedar	<i>Juniperus virginiana</i>	NS	9-11	12-13	14-18	19-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*11-13	14-16	17-20	21-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-9	10-11	12-15	16-20
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	NS	14-16	19-22
<b><u>Deciduous Trees</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS	NS	14-16	17-22
Golden willow	<i>Salix alba vitellina</i>	NS	NS	NS	NS	26-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*12-14	15-16	17-25	26-30
Hackberry	<i>Celtis</i>	NS	NS	13-15	16-20	21-28
Honeylocust	<i>Cleditsia triacanthos</i>	NS	13-14	15-17	18-22	23-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	38-45
Siberian crabapple	<i>Malus baccata</i>	NS	NS	11-13	14-17	18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*16-18	19-24	25-30	31-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>		NS	*6-8	6-8	9-10
Basin big sagebrush	<i>Artemisia tridentata</i>					
	<i>tridentata</i>	2-3	-	-	-	
Common chokecherry	<i>Prunus virginiana</i>	NS	*6-8	8-9	8-9	10-12
Fourwing saltbush	<i>Atriplex canescens</i>	NS	2-3	2-3	2-3	2-4
Golden currant	<i>Ribes aureum</i>	NS	NS	*3-5	3-5	5-7
Hansen hedgerose	<i>Rosa rugosa</i>	NS	3-4	4-5	5-6	5-7
Lilac	<i>Syringa vulgaris</i>	NS	*4-6	7-8	7-9	10-11
Nanking cherry 1/	<i>Prunus tomentosa</i>	NS	*3-4	4-6	5-6	7-9
Peking cotoneaster	<i>Cotoneaster acutifolius</i>	NS	*3-4	4-5	5-6	6-10
Redosier dogwood	<i>Cornus sericea</i>	NS	NS	NS	6-7	7-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	-	-	-	-
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS	NS	4-5	5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-7	7-8	8-9	10-15
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*6-8	7-9	10-11

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

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Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4	5-6	7-8	8-10
Tatarian honeysuck	<i>Lonicera tatarica</i>	NS	5-6	7-8	8-9	10-12
Western sandcherry <u>2/</u>	<i>Prunus pumila besseyi</i>	NS	2-3	3-4	3-4	3-4

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NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

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WINDBREAK GROUP 4C

Description and Limitations: Soils in this group have greater than 35 percent clay content throughout when mixed to 8 inches and are somewhat poorly, moderately well, or well drained. Soils in this group are suited for farmstead, feedlot, and field windbreaks. High clay content affects the selection and growth of trees and shrubs. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs. Because of high clay content, extra care will need to be exercised to make sure soil is firmly packed around roots after planting.

ADAPTED SPECIES FOR WINDBREAK GROUP 4C

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS	NS	14-18	19-24
Black Hills Spruce	<i>Picea glauca densata</i>	NS	NS	NS	NS	18-22
Blue spruce	<i>Picea pungens</i>	NS	NS	NS	NS	18-20
Eastern redcedar	<i>Juniperus virginiana</i>	NS	7-9	10-12	13-17	18-21
Ponderosa pine	<i>Pinus ponderosa</i>	NS	9-11	12-13	14-18	19-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	7-9	10-11	12-15	16-20
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	NS	NS	19-22
<b><u>Deciduous Trees:</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS	NS	NS	17-22
Golden willow	<i>Salix alba vitellina</i>	NS	NS	NS	NS	26-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*10-11	12-13	14-20	21-30
Hackberry	<i>Celtis</i>	NS	NS	*12-13	14-18	19-28
Honeylocust	<i>Gleditsia triacanthos</i>	NS	11-13	14-15	16-18	19-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	38-45
Siberian crabapple	<i>Malus baccata</i>	NS	NS	10-12	13-17	18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*14-16	17-22	23-26	27-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	*6-8	6-8	9-11
Common chokecherry	<i>Prunus virginiana</i>	NS	*6-8	8-9	8-9	10-12
Fourwing saltbush	<i>Atriplex canescens</i>	NS	2-3	-	-	-
Golden currant	<i>Ribes aureum</i>	NS	NS	NS	3-5	5-7
Hansen hedgerose	<i>Rosa rugosa</i>	NS	NS	3-4	4-5	4-7
Lilac	<i>Syringa vulgaris</i>	NS	*4-5	5-6	6-7	8-11
Nanking cherry <u>1/</u>	<i>Prunus tomentosa</i>	NS	*3-4	4-5	5-6	7-9
Peking cotoneaster	<i>Cotoneaster acutifolius</i>	NS	NS	4-5	5-6	6-10
Redosier dogwood	<i>Cornus sericea</i>	NS	NS	NS	NS	6-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	NS	2-3	-	-	-
Saskatoon serviceberry	<i>Asnanchier alnifolia</i>	NS	NS	NS	4-5	5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	4-5	5-6	6-8	9-15
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	NS	NS	10-11
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4	4-5	5-7	7-10
Tatarian honeysuck	<i>Lonicera tatarica</i>	NS	4-5	6-7	7-9	10-12
Western sandcherry <u>2/</u>	<i>Prunus pumila besseyi</i>	NS	NS	NS	2-4	2-4

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 5

Description and Limitations: Soils in this group are loamy with an available water capacity. They are moderately well to well drained. In the upper 12 inches, they lack free carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 5

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A	B	C	D	**PERM
		5-9"	10-14"	15-19"	20"+	IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS	15-17	18-20	21-24
Black Hills spruce	<i>Picea glauca densata</i>	NS	NS	NS	15-17	18-22
Blue spruce	<i>Picea pungens</i>	NS	NS	NS	15-17	18-24
Eastern redcedar	<i>Juniperus virgin</i>	NS	9-11	12-14	14-17	18-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*12-14	15-16	17-19	20-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-9	10-11	12-14	15-20
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	*14-16	17-18	19-22
<b><u>Deciduous Trees:</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS	NS	NS	18-22
Golden willow	<i>Salix alba vitellina</i>	NS	NS	NS	NS	26-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*11-14	15-16	17-22	24-30
Hackberry	<i>Celtis</i>	NS	NS	13-15	16-20	21-28
Honeylocust	<i>Gleditsia triacanthos</i>	NS	12-13	14-16	15-22	23-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	38-45
Siberian crabapple	<i>Malus baccata</i>	NS	NS	11-13	14-17	18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*16-18	19-25	26-30	31-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	*6-8	6-8	9-11
Basin big sagebrush	<i>Artemisia tridentata</i>	2-3	3-4	-	-	-
Common chokecherry	<i>Prunus virginiana</i>	NS	*6-7	7-9	7-9	10-12
Fourwing saltbush	<i>Atriplex canescens</i>	NS	2-3	-	-	-
Golden currant	<i>Ribes aureum</i>	NS	NS	NS	3-5	5-7
Hansen hedgerose	<i>Rosa rugosa</i>	NS	2-3	3-4	4-6	5-7
Lilac	<i>Syringa vulgaris</i>	NS	*4-6	6-7	7-9	10-11
Nanking cherry 1/	<i>Prunus tomentosa</i>	NS	NS	*4-5	5-6	7-9
Peking cotoneaster	<i>Cotoneaster acutifolius</i>	NS	NS	*3-5	5-6	6-10
Redosier dogwood	<i>Cornus sericea</i>	NS	NS	NS	NS	7-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	2-4	-	-	-
Saskatoon serviceberry	<i>Anielanchier alnifolia</i>	NS	NS	NS	4-5	5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-6	6-7	7-9	10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*6-7	8-9	10-13
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4	5-6	6-8	7-10
Tatarlan honeysuck	<i>Lonicera tatarica</i>	NS	5-6	7-8	8-9	10-12
Western sandcherry 2/	<i>Prunus pumila besseyi</i>	NS	2-3	3-4	3-4	3-4

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 5K

**Description and Limitations:** Soils in this group are loamy with a moderate available water capacity. They are moderately well or well drained. In the upper 12 inches, they have free carbonates, a pH of 7.8 to 9.0, or have an electrical conductivity (EC) of less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Free carbonates and a high pH in the upper 12 inches affect the selection on tree and shrub species. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 5K

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	PERM **IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Black Hills spruce	<i>Picea glauca densata</i>	NS	NS	NS	NS	18-22
Blue spruce	<i>Picea pungens</i>	NS	NS	NS	NS	18-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	8-9	10-11	12-14	18-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*10-12.	12-14	14-18	21-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	7-9	10-11	12-14	15-20
<b><u>Deciduous Trees:</u></b>						
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*10-12	12-14	14-20	24-32
Hackberry	<i>Celtis</i>	NS	NS	NS	12-15	23-28
Honeylocust	<i>Gleditsia triacanthos</i>	NS	11-12	13-15	15-20	26-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	38-45
Siberian elm	<i>Ulmus pumila</i>	NS	*16-17	18-22	23-28	30-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	NS	NS	9-11
Basin big sagebrush	<i>Artemisia tridentata</i>	3-4	3-4	-	-	-
Common chokecherry	<i>Prunus virginiana</i>	NS	NS	*7-8	8-9	10-12
Fourwing saltbush	<i>Atriplex canescens</i>	NS	2-3	2-3	2-3	-
Greasewood	<i>Sarcobatus vermiculatus</i>	NS	2-4	-	-	-
Lilac	<i>Syringa vulgaris</i>	NS	*4.-5	5-6	7-8	9-11
Rubber rabbitbush	<i>Chrysothamnus nauseosus</i>	2-3	2-3	-	-	-
Siberian peashrub	<i>Caragana arborescens</i>	NS	4-5	6-7	7-9	10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*5-7	7-9	10-13
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4	5-6	6-8	7-10
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	4-5	6-7	8-9	10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

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WINDBREAK GROUP 6G

Description and Limitations: Soils in this group are loamy-skeletal and sandy-skeletal, and moderately well to excessively drained. Available water capacity is very low. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs. The very low AWC affects the selection and growth of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 6G

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS	*12-14	15-18	21-24
Black Hills spruce	<i>Picea glauca densata</i>	NS	NS	NS	NS	18-22
Blue spruce	<i>Picea pungens</i>	NS	NS	NS	NS	18-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	8-9	10-11	12-15	18-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*10-11	12-14	15-18	20-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	7-8	9-10	11-14	16-20
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	12-14	15-17	19-22
<b><u>Deciduous Trees:</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS	NS	NS	18-22
Green ash	<i>Fraxinus pennsylvanica</i>	NS	NS	*12-14	14-20	26-30
Hackberry	<i>Celtis</i>	NS	NS	NS	12-16	21-28
Honeylocust	<i>Gleditsia triacanthos</i>	NS	NS	12-15	16-20	23-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	30-40
Siberian crabapple	<i>Malus baccata</i>	NS	NS	NS	11-13	18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*14-16	18-22	23-28	30-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	NS	6-8	9-11
Antelope bitterbrush	<i>Purshia tridentata</i>	NS	2-3	3-4	-	-
Basin big sagebrush	<i>Artemisia tridentata</i>	2-3	3-4	4-5	-	-
Common chokecherry	<i>Prunus virginiana</i>	NS	NS	*6-8	8-10	10-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3	2-3	-	-
Golden currant	<i>Ribes aureum</i>	NS	NS	NS	NS	5-7
Hansen hedgerose	<i>Rosa rugosa</i>	NS	2-3	3-4	4-5	5-7
Lilac	<i>Syringa vulgaris</i>	NS	NS	*4-6	6-7	8-11
Nanking cherry 1/	<i>Prunus tomentosa</i>	NS	NS	NS	4-6	6-9
Peking cotoneaster	<i>Cotoneaster acutifolius</i>	NS	NS	*4-5	5-6	6-10
Redosier dogwood	<i>Cornus sericea</i>	NS	NS	NS	NS	6-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	2-3	3-4	-	-
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS	NS	4-5	5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-6	6-7	7-9	10-14
Silver- buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*5-6	7-8	10-13
Silver- sagebrush	<i>Artemisia cana</i>	NS	2-3	2-3	-	-
Skunkbush sumac	<i>Rhus trilobata</i>	NS	NS	3-4	5-6	6-10
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	NS	5-7	7-9	10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

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Western sandcherry <u>2/</u>	Prunus pumila besseyi	NS	NS	2-3	3-4	3-4
Yucca	Yucca glauca	1-2	1-2	2-3	-	-

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NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 6R

Description and Limitations: Soils in this group are moderately deep over bedrock. Available water capacities are very low to moderate. Soils in this group are suited for farmstead, feedlot, and Held windbreaks. The very low to moderate AWC affects the selection and growth of tree and shrub species. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 6R

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 5-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS	*1 2-15	15-20	21-24
Black Hills spruce	<i>Picea glauca densata</i>	NS	NS	NS	NS	18-22
Blue spruce	<i>Picea pungens</i>	NS	NS	NS	NS	18-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	8-10	11-12	13-16	18-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*10-12	12-15	15-19	20-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	7-9	10-11	11-15	16-20
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	12-15	15-18	19-22
<b><u>Deciduous Trees</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS	NS	NS	18-22
Colder willow	<i>Sal alba vitellina</i>	NS	NS	NS	NS	26-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*10-12	13-15	15-22	26-30
Hackberry	<i>Celtis</i>	NS	NS	11-13	14-18	23-28
Honeylocust	<i>Cleditsia triacanthos</i>	NS	13-15	16-18	18-22	25-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	30-40
Siberian crabapple	<i>Malus baccata</i>	NS	NS	*11-13	14-17	18-20
Siberian elm	<i>Ulmus puniila</i>	NS	*16-18	19-23	24-29	30-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	NS	6-8	9-11
Antelope bitterbrush	<i>Purshia tridentata</i>	NS	2-3	3-4	-	-
Basin big sagebrush	<i>Artemisia tridentata</i>	2-3	3-4	4-5	-	-
Common chokecherry	<i>Prunus virginiana</i>	NS	NS	*6-8	8-10	10-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3	2-3	-	-
Golden currant	<i>Ribes aureum</i>	NS	NS	NS	4-5	5-7
Hansen hedgerose	<i>Rosa rugosa</i>	NS	2-3	3-4	4-5	5-7
Lilac	<i>Syringa vulgaris</i>	NS	NS	*5-6	6-7	8-11
Nanking cherry 1/	<i>Prunus tomentosa</i>	NS	NS	*4-5	5-7	7-9
Peking cotoneaster	<i>Cotoneaster acutifolius</i>	NS	NS	*4-5	5-6	6-10
Redosier dogwood	<i>Cornus stolonifera</i>	NS	NS	NS	NS	6-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	3-4	3-4	-	-
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS	NS	NS	5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-7	7-8	7-9	10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*7-8	8-9	10-13
Silver sagebrush	<i>Artemisia cana</i>	NS	2-3	2-3	-	-
Skunkbush sumac	<i>Rhus trilobata</i>	NS	*3-4	5-6	6-7	7-10

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

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Tatarian honeysuck	Lonicera tatarica	NS	5-6	7-8	8-9	10-12
Western sandcherry <u>2/</u>	Prunus punila besseyi	NS	NS	2-3	3-4	3-4
Yucca	Yucca glauca	1-2	1-2	2-3	-	-

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NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 7

**Description and Limitations:** Soils in this group are deep and sandy throughout. Soils in this group are poorly suited to farmstead, feedlot, and field windbreaks. A very low to moderate available water capacity affects the selection and health and growth of trees and shrubs. Soil blowing at or near the planting can adversely affect the health and vigor of developing windbreaks. Optimum growth and survival are not expected.

ADAPTED SPECIES FOR WINDBREAK GROUP 7

MEASURED OR ESTIMATED HEIGHT IN FEET AT ACE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS	*12-13	14-16	20-24
Black Hills spruce	<i>Picea glauca densata</i>	NS	NS	NS	NS	18-22
Blue spruce	<i>Picea pungens</i>	NS	NS	NS	NS	18-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	*7-8	9-10	11-15	18-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	NS	10-12	13-17	20-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	*6-7	8-9	10-14	16-20
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	12-13	14-16	19-22
<b><u>Deciduous Trees</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS	NS	NS	18-22
Green ash	<i>Fraxinus pennsylvanica</i>	NS	NS	11-13	14-18	26-30
Hackberry	<i>Celtis</i>	NS	NS	NS	13-15	21-28
Honeylocust	<i>Gleditsia triacanthos</i>	NS	NS	12-15	16-20	23-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	25-35
Siberian crabapple	<i>Malus baccata</i>	NS	NS	NS	11-13	18-20
Siberian elm	<i>Ulmus pumila</i>	NS	NS	15-18	19-24	28-30
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	NS	6-8	9-11
Common chokecherry	<i>Prunus virginiana</i>	NS	NS	NS	8-10	10-12
Golden currant	<i>Ribes aureum</i>	NS	NS	NS	NS	5-7
Hansen hedgerose	<i>Rosa rugosa</i>	NS	*2-3	3-4	4-5	5-7
Lilac	<i>Syringa vulgaris</i>	NS	NS	*4-6	5-7	8-11
Nanking cherry <u>1/</u>	<i>Prunus tomentosa</i>	NS	NS	NS	4-6	6-9
Peking cotoneaster	<i>Cotoneaster acutifolius</i>	NS	NS	NS	5-6	6-10
Redosier dogwood	<i>Cornus stolonifera</i>	NS	NS	NS	NS	6-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	NS	*2-3	3-4	-	-
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS	NS	NS	5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	*4-5	6-7	7-9	10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	NS	NS	9-13
Silver sagebrush	<i>Artemisia cana</i>	1-2	2-3	3-4	-	-
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	NS	5-6	7-9	10-12
Western sandcherry <u>2/</u>	<i>Prunus pumila besseyi</i>	NS	NS	2-3	3-4	3-4
Woods' rose	<i>Rosa woodsii</i>	NS	*2-4	3-4	-	-

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

SOIL AND SITE INFORMATION  
TECHNICAL GUIDE SECTION II-K  
WINDBREAK SUITABILITY GROUPS  
PLANTING ZONE 1

Yucca	Yucca glauca	1-2	1-2	2-3	-	-
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NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 8

Description and Limitations: Soils in this group are loamy with a high available water capacity. They are moderately well or well drained. In the upper 12 inches, they have free carbonates, have a pH of 7.5 to 9.0, or have an EC less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Free carbonates and a high pH affect the concern for establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 8

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Black Hills spruce	<i>Picea glauca densata</i>	NS	NS	NS	NS	18-22
Blue spruce	<i>Picea pungens</i>	NS	NS	NS	NS	18-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	8-9	10-11	12-14	18-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*10-12	12-14	14-18	21-2k
Rocky Mt. juniper	<i>Juniperus scopulorum</i> ,	NS	7-9	10-11	12-14	15-20
<b><u>Deciduous Trees:</u></b>						
Green ash	<i>Fraxinus pennsylvanica</i>	NS	10-12	12-14	14-22	28-32
Hackberry	<i>Celtis</i>	NS	NS	NS	12-18	25-28
Honeylocust	<i>Gleditsia triacanthos</i>	NS	11-12	13-15	15-20	28-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	38-45
Siberian elm	<i>Ulmus pumila</i>	NS	16-18	19-22	23-29	30-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	NS	8-10	10-11
Basin big sagebrush	<i>Artemisia tridentata</i> tridentata	2-3	3-4	-	-	-
Common chokecherry	<i>Prunus virginiana</i>	NS	NS	6-8	8-10	11-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3	-	-	-
Lilac	<i>Syringa vulgaris</i>	NS	4-5	5-6	7-8	9-11
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	2-3	-	-	-
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-6	6-7	7-8	10-14
Silver buffaloberrv	<i>Shepherdia argentea</i>	NS	NS	5-7	7-10	11-13
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4	5-6	6-8	7-10
Taterian honeysuckle	<i>Lonicera tatarica</i>	NS	5-6	6-8	8-10	11-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 9G

Description and Limitations: Soils in this group are deep with a water table within 5 feet of the surface; some are subject to flooding or ponding. In the upper 12 inches, they have a pH of greater than 7.8 and an EC 4 - 16 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks High pH and low to moderate EC in the upper 12 inches affect the selection and growth of trees and shrubs. Competition from grass and weeds is a primary concern for establishment and management of trees and shrubs. Spring planting may be delayed for a short period because of soil wetness.

ADAPTED SPECIES FOR WINDBREAK GROUP 9G

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+.	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Eastern redcedar	<i>Juniperus virginiana</i>	NS	NS	10-11	11-14	18-23
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	*7-8	9-10	10-13	15-22
<b><u>Deciduous Trees</u></b>						
Green ash	<i>Fraxinus pennsylvanica</i>	NS	NS	15-17	19-20	24-30
Honeylocust	<i>Gleditsia triacanthos</i>	NS	13-15	16-18	19-23	24-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	26-29	30-36	37-45
Siberian elm	<i>Ulmus pumila</i>	NS	*15-18	20-23	24-28	29-36
<b><u>Shrubs</u></b>						
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3	2-3	-	-
Greasewood	<i>Sarcobatus vermiculatus</i>	2-3	2-4	4-5	-	-
Lilac	<i>Syringa vulgaris</i>	NS	*4-6	6-7	7-8	9-11
Rubber redbud	<i>Chrysothamnus nauseosus</i>	2-3	2-3	3-4	-	-
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-7	7-9	8-9	10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	6-8	9-10	10-13
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4	5-6	7-8	8-10
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	5-7	7-8	8-9	10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 9N

Description and Limitations: Soils in this group are deep, do not have a water table within 5 feet of the surface, and are not subject to flooding or ponding. In the upper 12 inches, they have a pH of greater than 7.8 and an EC 4-16 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. High pH and low to moderate EC in the upper 12 inches affect the selection and growth of trees and shrubs. Competition from grass and weeds is a primary concern for establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 9N

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Eastern redcedar	Juniperus virginiana	NS	NS	*7-8	8-12	15-20
Ponderosa pine	Pinus ponderosa	NS	*9-10	11-12	13-18	19-24
Rocky Mt. juniper	Juniperus scopulorum	NS	*5-6	6-7	7-10	14-18
<b><u>Deciduous Trees</u></b>						
Green ash	Fraxinus pennsylvanica	NS	NS	*10-12	12-18	20-28
Plains cottonwood	Populus sargentii	NS	NS	NS	NS	30-40
Siberian elm	Ulmus pumila	NS	*10-11	12-13	14-20	26-35
<b><u>Shrubs</u></b>						
Basin big sagebrush	Artemisia tridentata					
	tridentata	NS	3-4	-	-	-
Fourwing saltbush	Atriplex canescens	2-3	2-3	-	-	-
Greasewood	Sarcobatus vermiculatus	2-3	2-3	-	-	-
Lilac	Syringa vulgaris	NS	NS	5-6	6-8	9-11
Rubber rabbitbrush	Chrysothamnus nauseosus	NS	2-3	-	-	-
Siberian peashrub	Caragana arborescens	NS	4-5	5-6	7-8	8-12
Silver buffaloberry	Shepherdia argentea	NS	NS	4-6	7-9	10-13
Skunkbush sumac	Rhus trilobata	NS	3-4	4-5	5-7	8-10
Tatarian honeysuckle	Lonicera tatarica	NS	4-5	5-6	7-9	10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 10

Description and Limitations: Soils in this group have one or more characteristics which severely limit planting, survival, or growth of trees and shrubs. Examples include shallow and very shallow soils, soils with a very low available water capacity, poorly and very poorly drained soils that are saturated or ponded throughout the growing season, and toxic soils. Soils in this group are usually not recommended for farmstead, feedlot, and field windbreaks. However, onsite investigations may reveal that some tree and shrub plantings can be made with special treatments. The selection of species must be tailored to the soil conditions existing at the altered site.

ADAPTED SPECIES FOR WINDBREAK GROUP 10

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A	B	C	D	**PERM IRRIG.
		5-9"	10-14"	15-19"	20"+	
<b><u>Evergreen Coniferous Trees</u></b>						

**Deciduous Trees:**

**Shrubs**

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NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 1

**Description and Limitations:** Soils in this group are loamy (35% clay content) and are subject to frequent flooding (run in) or a seasonal water table. The upper 12 inches lack tree carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Spring planting may be delayed for a short period because of soil wetness. Competition from weeds and grass is a primary concern in establishment of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 1

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS			21-24
Blue spruce	<i>Picea pungens</i>	NS	11-13			21-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	14-16			22-24
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*15-17			22-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-12			20-22
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	No Subgroups C or D In This Zone		21-22
<b><u>Deciduous Trees:</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS			21-22
Golden willow	<i>Salix alba vitellina</i>	NS	*18-22			31-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*13-15			26-30
Honeylocust	<i>Gleditsia triacanthos</i>	NS	14-16			26-30
Plains cottonwood	<i>Populus sargentii</i>	NS	*26-30			37-45
Siberian crabapple	<i>Malus baccata</i>	NS	*10-12			18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*19-21			31-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	*6-8			9-11
Basin big sagebrush	<i>Artemisia tridentata</i>	2-3	-			-
Common chokecherry	<i>Prunus virginiana</i>	NS	*6-9			10-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3			2-4
Golden currant	<i>Ribes aureum</i>	NS	NS			5-8
Greasewood	<i>Sarcobatus vermiculatus</i>	2-4	-			-
Hansen hedgerose	<i>Rosa rugosa</i>	NS	2-3			6-7
Lilac	<i>Syringa vulgaris</i>	NS	4-6			10-11
Nanking cherry <u>1/</u>	<i>Prunus tomentosa</i>	NS	*3-4			9-10
Peking cotoneaster	<i>Cotoneaster acutifolia</i>	NS	*3-4			9-10
Redosier dogwood	<i>Cornus sericea</i>	NS	NS			8-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	-			-
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS			7-8
Siberian peashrub	<i>Caragana arborescens</i>	NS	NS			12-15
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS			11-13
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4			8-10
Tatarian honeysuck	<i>Lonicera tatarica</i>	NS	6-7			10-12
Western sandcherry <u>2/</u>	<i>Prunus pumila besseyi</i>	NS	2-3			3-4

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 1K

**Description and Limitations:** Soils in this group are loamy (35% clay content) and are subject to frequent flooding (run-in) or a seasonal high water table. In the upper 12 inches, they have free carbonates, have a pH of 7.8 to 9.0, or have an electrical conductivity (EC) of less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Spring planting may be delayed for a short period because of soil wetness. Competition from weeds and grass is a primary concern in establishment of trees and shrubs. Free carbonates, high pH, and a slight EC affect the selection and growth of species.

ADAPTED SPECIES FOR WINDBREAK GROUP 1K

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	** PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Black Hills spruce	<i>Picea glauca densata</i>	NS	NS			21-23
Eastern redcedar	<i>Juniperus virginiana</i>	NS	14-16			21-23
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*			22-25
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	9-11	No Subgroups C or D In This Zone		20-22
<b><u>Deciduous Trees</u></b>						
Golden willow	<i>Salix alba vitellina</i>	NS	*18-22			31-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*13-15			24-30
Honeyloacust	<i>Gleditsia triacanthos</i>	NS	14-16			26-30
Plains cottonwood	<i>Populus sargentii</i>	NS	*26-30			37-45
Siberian elm	<i>Ulmus pumila</i>	NS	*19-21			31-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	*6-8			9-11
Common chokecherry	<i>Prunus virginiana</i>	NS	*6-9			10-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3			2-4
Greasewood	<i>Sarcobatus vermitulatus</i>	2-4	2-4			-
Lilac	<i>Syringa vulgaris</i>	NS	*4-6			10-11
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	2-3			-
Siberian peashrub	<i>Caragana arbore</i>	NS	5-8			11-15
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS			11-13
Skunkbush sunac	<i>Rhus trilobata</i>	NS	3-4			9-10
Tatarian honeysuck	<i>Lonicera tatarica</i>	NS	5-7			10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 2

Description and Limitations: Soils in this group are artificially drained phases of poorly drained soil. The upper 12 inches lack free carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Spring planting may be delayed for a short period because of soil wetness. Competition from weeds and grass is a primary concern in establishment of trees and shrubs. Degree of wetness and drainage affect the selection of tree and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 2

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUSGROUP						
COMMON NAME	SCIENTIFIC NAME	A	B	C	D	**PERM IRRIG.
		5-9"	10-14"	15-19"	20"+	

**Evergreen Coniferous Trees:**

There are no soils in Wyoming in this group.

**Deciduous Trees**

**Shrubs**

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NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 2K

Description and Limitations: Soils in this group are artificially drained phases of poorly and very poorly drained soils. The upper 12 inches has free carbonates, a pH of 7.8 to 9.0, and an electrical conductivity (EC) of less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Degree of wetness and drainage, free carbonates, a high pH, or a high EC will affect the selection and growth of trees or shrubs. Competition from weeds and grass is a primary concern. Spring planting may be delayed for a short period because of soil wetness.

ADAPTED SPECIES FOR WINDBREAK GROUP 2K

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A	B	C	D	**PERM. IRRIG.
		5-9"	10-15"	15-19"	20"+	

Evergreen Coniferous Trees

Deciduous Trees

There are no soils in  
Wyoming in this group.

Shrubs

---

**NS Not Suitable**

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 3

Description and Limitations: Soils in this group are loamy (35% clay content) and are moderately well or well drained and clayey soils with a loamy surface man greater than 20 inches. Available water capacity is high. In the upper 12 Inches, they lack free carbonates, have a pH less than 7.3, and are nonsaline. Soils in this group are well suited for farmstead, feedlot and field windbreaks. Competition from weeds and grass is a principal concern in the establishment of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 3

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS			21-24
Blue spruce	<i>Picea pungens</i>	NS	NS			21-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	9-11			20-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*14-15			21-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-9			16-20
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	No Subgroups C or D In This Zone		19-22
<b><u>Deciduous Trees</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS			18-22
Golden willow	<i>Salix alba vitellina</i>	NS	NS			26-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	12-14			26-30
Honeylocust	<i>Gleditsia triacanthos</i>	NS	13-15			23-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS			38-45
Siberian crabapple	<i>Malus baccata</i>	NS	NS			18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*17-19			31-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS			10-12
Basin big sagebrush	<i>Artemisia tridentata</i>	2-3	-			-
Common chokecherry	<i>Prunus virginiana</i>	NS	*6-7			10-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3			-
Golden currant	<i>Ribes aureum</i>	NS	NS			5-7
Hansen hedgerose	<i>Rosa rugosa</i>	NS	3-4			5-7
Lilac	<i>Syringa vulgaris</i>	NS	*4-6			10-11
Nanking cherry 1/	<i>Prunus tomentosa</i>	NS	*3-4			7-9
Peking cotoneaster	<i>Cotoneaster acutifolius</i>	NS	*3-4			6-10
Redosier dogwood	<i>Cornus sericea</i>	NS	NS			8-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	-			-
Saskatoon serviceberry	<i>Aielanchier alnifolia</i>	NS	NS			5-6
Siberian peasbrub	<i>Caragana arborescens</i>	NS	7-8			10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS			10-13
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4			8-10
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	5-6			10-12
Western sandcherry 2/	<i>Prunus pumila besseyi</i>	NS	2-3			3-4

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 4

Description and Limitations: Soils in this group are clayey with an 8 to 20 inch loamy surface mantle and are somewhat poorly, moderately well, or well drained. Soils in this group are suited for farmstead, feedlot, and Held windbreaks. High clay content below the surface mantle affects the selection and growth of tree and shrub species. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 4

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A	B	C	D	**PERM
		5-9"	10-14"	15-19"	20"+	IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS			21-24
Blue spruce	<i>Picea pungens</i>	NS	NS			18-22
Eastern redcedar	<i>Juniperus virginiana</i>	NS	9-11			19-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	11-13			21-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-9			16-20
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	No Subgroups C or D In This Group		19-22
<b><u>Deciduous Trees:</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS			17-22
Golden willow	<i>Salix alba vitellina</i>	NS	NS			26-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*12-14			26-30
Honeylocust	<i>Gleditsia triacanthos</i>	NS	13-14			23-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS			38-45
Siberian crabapple	<i>Malus baccata</i>	NS	NS			18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*16-17			31-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS			9-11
Basin Big Sagebrush	<i>Artemisia tridentata</i>	2-3	-			-
Common chokecherry	<i>Prunus virginiana</i>	NS	*6-8			10-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3			3-4
Golden currant	<i>Ribes aureum</i>	NS	NS			5-7
Hansen hedgerose	<i>Rosa rugosa</i>	NS	3-4			5-7
Lilac	<i>Syringa vulgaris</i>	NS	*4-6			10-11
Nanking cherry 1/	<i>Prunus tonentosa</i>	NS	*3-4			7-9
Peking cotoneaster	<i>Cotoneaster acutifolius</i>	NS	*3-4			6-10
Redosier dogwood	<i>Cornus sericea</i>	NS	NS			7-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	-			-
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS			5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-7			10-15
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS			10-11
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4			8-10
Tatarian honeysuck	<i>Lonicera tatarica</i>	NS	5-6			10-12
Western sandcherry 2/	<i>Prunus pumila besseyi</i>	NS	2-3			3-4

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 4C

Description and Limitations: soils in this group have greater than 35 percent clay content throughout when mixed to 8 inches and are somewhat poorly, moderately well, or well drained. Soils in this group are suited for farmstead, feedlot, and field windbreaks. High clay content affects the selection and growth of trees and shrubs. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs. Because of high clay content, extra care will need to be exercised to make sure soil is firmly packed around roots after planting.

ADAPTED SPECIES FOR WINDBREAK GROUP 4C

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees:</u></b>						
Blue spruce	<i>Picea pungens</i>	NS	NS			18-20
Eastern redcedar	<i>Juniperus virginiana</i>	NS	7-9			18-21
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*9-10			19-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	7-9	No Subgroups C or D		16-20
In This Group						
<b><u>Deciduous Trees:</u></b>						
Soxelder	<i>Acer negundo</i>	NS	NS			17-22
Golden willow	<i>Salix alba vtellina</i>	NS	NS			26-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	* 9-11			21-30
Honeylocust	<i>Gleditsia triacanthos</i>	NS	11-13			19-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS			38-45
Siberian crabapple	<i>Malus baccata</i>	NS	NS			18-20
Siberian elm	<i>Ulmus punila</i>	NS	*14-16			27-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS			9-11
Common chokecherry	<i>Prunus virginiana</i>	NS	*6-8			10-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3			3-4
Golden currant	<i>Ribes aureum</i>	NS	NS			5-7
Hansen hedgerose	<i>Rosa rugosa</i>	NS	NS			4-7
Lilac	<i>Syringa vulgaris</i>	NS	*4-5			8-11
Nanking cherry 1/	<i>Prunus tomentosa</i>	NS	*3-4			7-9
Peking cotoneaster	<i>Cotoneaster acutifolius</i>	NS	NS			6-10
Redosier dogwood	<i>Cornus sericea</i>	NS	NS			6-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	2-3			
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS			5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	4-5			9-15
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS			10-11
Skunkbush sumac	<i>Rhus trilobata</i>	NS	NS			7-10
Tatarian honeysuck	<i>Lonicera tatarica</i>	NS	4-5			10-12
Western sandcherry 2/	<i>Prunus pumila besseyi</i>	NS	NS			2-4

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 5

Description and Limitations Soils in this group are loamy with a moderate available water capacity. They are moderately well to well drained. In the upper 12 inches, they lack free carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 5

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBCROUP						
COMMON NAME	SCIENTIFIC NAME	A	B	C	D	**PERM
		5-9"	10-14"	15-19"	20"+	IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS			21-24
Blue spruce	<i>Picea pungens</i>	NS	NS			18-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	9-11			18-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	12-14			21-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-9			15-20
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	No Subgroups C or D In This Group		21-24
<b><u>Deciduous Trees</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS			18-22
Golden willow	<i>Salix alba vitellina</i>	NS	NS			26-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*11-14			24-30
Honeylocust	<i>Gleditsia triacanthos</i>	NS	12-13			23-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS			38-45
Siberian crabapple	<i>Malus baccata</i>	NS	NS			18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*16-18			31-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS			9-11
Basin big sagebrush	<i>Artemisia tridentata</i>					
	<i>tridentata</i>	2-3	3-4			-
Common chokecherry	<i>Prunus virginiana</i>	NS	*6-7			10-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3			-
Golden currant	<i>Ribes aureum</i>	NS	NS			5-7
Hansen hedgerose	<i>Rosa rugosa</i>	NS	2-3			5-7
Lilac	<i>Syringa vulgaris</i>	NS	*4-6			9-11
Nanking cherry 1/	<i>Prunus tomentosa</i>	NS	NS			7-9
Peking cotoneaster	<i>Cotoneaster acutifolius</i>	NS	NS			6-10
Redosier dogwood	<i>Cornus sericea</i>	NS	NS			7-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-4	2-4			-
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS			5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-6			10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS			10-13
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4			7-10
Tatarlan honeysuck	<i>Lonicera tatarica</i>	NS	5-6			10-12
Western sandcherry 2/	<i>Prunus pumila besseyi</i>	NS	2-3			3-4

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 5K

Description and Limitations: Soils in this group are loamy with a moderate available water capacity. They are moderately well or well drained. In the upper 12 inches, they have free carbonates, a pH of 7.8 to 9.0, or have an electrical conductivity (EC) of less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Free carbonates and a high pH in the upper 12 inches affect the selection on tree and shrub species. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 5K

MEASURED OR ESTIMATED HEIGHT IN FEET AT ACE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG
<b><u>Evergreen Coniferous Trees</u></b>						
Blue spruce	<i>Picea pungens</i>	NS	NS			18-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	8-9	No Subgroups C or D in this Zone		18-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*10-12			21-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	7-9			15-20
<b><u>Deciduous Trees</u></b>						
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*10-12			24-32
Honeylocust	<i>Gleditsia triacanthos</i>	NS	11-12			26-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS			38-45
Siberian elm	<i>Ulmus pumila</i>	NS	*16-17			30-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS			9-11
Basin big sagebrush	<i>Artemisia tridentata tridentata</i>	2-3	3-4			-
Common chokecherry	<i>Prunus virginiana</i>	NS	NS			10-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3			-
Greasewood	<i>Sarcobatus vermiculatus</i>	NS	2-4			-
Lilac	<i>Syringa vulgaris</i>	NS	*4-5			9-11
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	2-3			-
Siberian peashrub	<i>Caragana arborescens</i>	NS	4-5			10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS			10-13
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4			7-10
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	4-5			10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 6G

Description and Limitations: Soils in this group are loamy-skeletal and sandy-skeletal, and moderately well to excessively drained. Available water capacity is very low. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs. The very low AWC affects the selection and growth of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK CROUP 6G

MEASURED OR ESTIMATED F-EIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS			21-24
Blue spruce	<i>Picea pungens</i>	NS	NS			18-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	8-9			18-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*10-11			20-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	7-8	No Subgroups C or D		16-20
<b><u>Deciduous Trees:</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS			18-22
Green ash	<i>Fraxinus pennsylvanica</i>	NS	NS			26-30
Honeylocust	<i>Gleditsia triacanthos</i>	NS	NS			23-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS			30-40
Siberian crabapple	<i>Malus baccata</i>	NS	NS			18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*14-17			28-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS			9-11
Antelope bitterbrush	<i>Purshia tridentata</i>	NS	2-3			-
Basin big sagebrush	<i>Artemisia tridentata</i>		3-4			-
Conron chokecherry	<i>Prunus virginiana</i>	2-3	NS			10-12
Fourwing saltbrush	<i>Atriplex canescens</i>	NS	2-3			-
Golden currant	<i>Ribes aureum</i>	NS	NS			5-7
Hansen hedgerose	<i>Rosa rugosa</i>	NS	2-3			5-7
Lilac	<i>Syringa vulgaris</i>	NS	NS			8-11
Nanking cherry <u>1/</u>	<i>Prunus tomentosa</i>	NS	NS			6-9
Peking cotoneaster	<i>Cotoneaster acutifolius</i>	NS	NS			6-10
Redosier dogwood	<i>Cornus sericea</i>	NS	NS			6-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	2-4			-
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS			5-6
Siberian peashrub	<i>Caragana arbrescens</i>	NS	5-6			10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS			10-13
Silver sagebrush	<i>Artemisia cana</i>	NS	2-3			-
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-5			6-10
Tatarian horeysuck	<i>Lonicera tatarica</i>	NS	NS			10-12
Western sandcherry <u>2/</u>	<i>Prunus pumila besseyi</i>	NS	NS			3-4
Yucca	<i>Yucca glauca</i>	NS	1-2			-

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 6R

Description and Limitations: Soils in this group are moderately deep over bedrock. Available water capacities are very low to moderate. Soils in this group are suited for farmstead, feedlot, and field windbreaks. A very low to moderate AWC affects the selection and growth of tree and shrub species. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 6R

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A	B	C	D	**PERM
		5-9"	10-14"	15-19"	20"+	IRRIG
<b><u>Evergreen Coniferous Trees</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS			21-24
Blue spruce	<i>Picea pungens</i>	NS	NS			18-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	8-10			18-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*10-12			20-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	7-9	No Subgroups C or D In This Group		16-20
<b><u>Deciduous Trees</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS			18-22
Golden willow	<i>Salix alba vitellina</i>	NS	NS			26-32
Green ash	<i>Fraxinus pennsylvanica</i>	NS	*10-12			26-30
Honeylocust	<i>Gleditsia triacanthos</i>	NS	13-15			25-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS			30-40
Siberian crabapple	<i>Malus baccata</i>	NS	NS			18-20
Siberian elm	<i>Ulmus pucnila</i>	NS	*16-18			30-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS			9-11
Antelope bitterbrush	<i>Purshia tridentata</i>	NS	2-3			-
Basin big sagebrush	<i>Artemisia tridentata tridentata</i>	2-3	3-4			-
Common chokecherry	<i>Prunus virginiana</i>	NS	NS			10-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3			-
Golden currant	<i>Ribes aureum</i>	NS	NS			5-7
hedgerose	<i>Rosa rugosa</i>	NS	2-3			5-7
Lilac	<i>Syringa vulgaris</i>	NS	NS			8-11
Nanking cherry	<i>Prunus tomentosa</i>	NS	NS			7-9
Peking cotoneaster	<i>Cotoneaster acutifolius</i>	NS	NS			6-10
Redosier dogwood	<i>Cornus sericea</i>	NS	NS			6-9
Rubber rabltbrush	<i>Chrysothamnus nauseosus</i>	1-3	2-4			-
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS			5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-8			10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS			10-13
Silver sagebrush	<i>Artemisia cana</i>	NS	2-3			-
Skunkbush sumac	<i>Rhus trilobata</i>	NS	*3-4			7-10
Tatar honeysuckle	<i>Lonicera tatarica</i>	NS	*5-7			10-12
Western sandcberry <u>2/</u>	<i>Prunus pumila besseyi</i>	NS	NS			3-4
Yucca	<i>Yucca glauca</i>	NS	1-2			-

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 7

Description and Limitations: Soils in this group are deep and sandy throughout. Soils in this group are poorly suited to farmstead, feedlot, and field windbreaks. A very low to moderate available water capacity affects the selection and health and growth of trees and shrubs. Soil blowing at or near the planting can adversely affect the health and vigor of developing windbreaks. Optimum growth and survival are not expected.

ADAPTED SPECIES FOR WINDBREAK GROUP 7

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees:</u></b>						
Austrian pine	<i>Pinus nigra</i>	NS	NS			20-24
Blue spruce	<i>Picea pungens</i>	NS	NS			18-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	*6-10			18-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	NS			20-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	*6-7	No Subgroups C or D In This Group		16-20
<b><u>Deciduous Trees</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS			18-22
Green ash	<i>Fraxinus pennsylvanica</i>	NS	NS			26-30
Honeylocust	<i>Gleditsia triacanthos</i>	NS	NS			23-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS			25-35
Siberian crabapple	<i>Malus baccata</i>	NS	NS			18-20
Siberian elm	<i>Ulmus pumila</i>	NS	NS			28-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS			9-11
Common chokecherry	<i>Prunus virginiana</i>	NS	NS			10-12
Golden currant	<i>Ribes aureum</i>	NS	NS			5-7
Hansen hedgerose	<i>Rosa rugosa</i>	NS	NS			5-7
Lilac	<i>Syringa vulgaris</i>	NS	NS			8-11
Nanking cherry <u>1/</u>	<i>Prunus tomentosa</i>	NS	NS			6-9
Peking cotoneaster	<i>Cotoneaster acutifolia</i>	NS	NS			6-10
Redosier dogwood	<i>Cornus stolonifera</i>	NS	NS			6-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	1-3	*2-4			-
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS			5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	NS			10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS			9-13
Silver sagebrush	<i>Artemisia cana</i>	NS	2-3			-
Skunkbush sumac	<i>Rhus trilobata</i>	NS	NS			6-10
Tatarian honeysuck	<i>Lonicera tatarica</i>	NS	NS			10-12
Western sandcherry <u>2/</u>	<i>Prunus pumila besseyi</i>	NS	NS			3-4
Woods' rose	<i>Rosa woodsii</i>	NS	*2-3			6-7
Yucca	<i>Yucca glauca</i>	NS	1-2			-

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 8

Description and Limitations: Soils in this group are loamy with a high available water capacity. They are moderately well or well drained. In the upper 12 inches, they have free carbonates, have a pH of 7.8 to 9.0, or have an EC of less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Free carbonates and a high pH affect the concern for establishment and management of trees and shrubs. Competition from grass and weeds is a primary concern for establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 8

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Blue spruce	<i>Picea pungens</i>	NS	NS			18-24
Eastern redcedar	<i>Juniperus virginiana</i>	NS	8-9			18-22
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*10-12			21-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	7-9	No Subgroups C or D In This Group		15-20
<b><u>Deciduous Trees</u></b>						
Green ash	<i>Fraxinus pennsylvanica</i>	NS	10-12			28-32
Honeylocust	<i>Gleditsia triacanthos</i>	NS	11-12			28-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS			38-45
Siberian elm	<i>Ulmus pumila</i>	NS	16-18			30-36
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS			10-11
Basin big sagebrush	<i>Artemisia tridentata tridentata</i>	2-3	3-4			-
Common chokecherry	<i>Prunus virginiana</i>	NS	NS			11-12
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3			-
Lilac	<i>Syringa vulgaris</i>	NS	4-5			9-11
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	2-4			-
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-6			10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS			11-13
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4			7-10
Tetarian honeysuckle	<i>Lonicera tatarica</i>	NS	5-6			11-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 9G

Description and Limitations: Soils in this group are deep with a water table within 5 feet of the surface; some are subject to flooding or ponding. In the upper 12 inches, they have a p of greater than 7.8 and an EC 4 - 16 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field wind breaks. High pH and low to moderate EC in the upper 12 inches affect the select and growth of trees and shrubs. Competition from grass and weeds is a primary concern for establishment and management of trees and shrubs. Spring planting may be delayed for a short period because of soil wetness.

ADAPTED SPECIES FOR WINDBREAK GROUP 9G

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Eastern redcedar	<i>Juniperus virginiana</i>	NS	NS			18-20
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	*7-8	No Subgroups C or D In This Group		15-
<b><u>Deciduous Trees</u></b>						
Green ash	<i>Fraxinus pennsylvanica</i>	NS	NS			24-30
Honeylocust	<i>Gleditsia triacanthos</i>	NS	13-15			24-30
Plains cottonwood	<i>Populus sargentii</i>	NS	NS			37-45
Siberian elm	<i>Ulmus pumila</i>	NS	15-19			29-36
<b><u>Shrubs</u></b>						
Fourwing saltbush	<i>Atriplex canescens</i>	2-3	2-3			-
Greasewood	<i>Sarcobatus vermiculatus</i>	2-3	4-5			-
Lilac	<i>Syringa vulgaris</i>	NS	*4-6			9-11
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	2-3	2-4			-
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-7			10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS			10-13
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4			8-10
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	5-7			10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 9N

Description and Limitations: Soils in this group are deep, do not have a water table within 5 feet of the surface, and are not subject to flooding or ponding. In the upper 12 inches, they have a pH of greater than 7.8 and an EC 4-16 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. High pH and low to moderate EC in the upper 12 inches affect the selection and growth of trees and shrubs. Competition from grass and weeds is a primary concern for establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 9N

MEASURED OR ESTIMATED HEIGHT IN FEET AT ACE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Eastern redcedar	Juniperus virginiana	NS	NS			15-20
Ponderosa pine	Pinus ponderosa	NS	*10-11			19-24
Rocky Mt. juniper	Juniperus scopulorum	NS	*5-6	No Subgroups C or D In This Group		14-18
<b><u>Deciduous Trees:</u></b>						
Green ash	Fraxinus pennsylvanica	NS	NS			20-28
Plains cottonwood	Populus sargentii	NS	NS			30-40
Siberian elm	Ulmus pumila	NS	*10-11			26-35
<b><u>Shrubs</u></b>						
Basin big sagebrush	Artemisia tridentata tridentata	2-3	3-4			-
Fourwing saltbush	Atriplex canescens	2-3	2-3			-
Greasewood	Sarcobatus vermiculatus	NS	2-3			-
Lilac	Syringa vulgaris	NS	NS			9-11
Rubber rabbitbrush	Chrysothamnus nauseosus	2-3	2-3			-
Siberian peashrub	Caragana arborescens	NS	4-5			8-12
Silver buffaloberry	Shepherdia argentea	NS	NS			10-13
Skunkbush sumac	Rhus trilobata	NS	3-4			8-10
Tatarian honeysuckle	Lonicera tatarica	NS	4-5			10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 10

Description and Limitations: Soils in this group have one or more characteristics which severely limit planting, survival, or growth of trees and shrubs. Examples include shallow and very shallow soils, soils with a very low available water capacity, poorly and very poorly drained soils that are saturated or ponded throughout the growing season, and toxic soils. Soils in this group are usually not recommended for farmstead, feedlot, and field windbreaks. However, onsite investigations may reveal that some tree and shrub plantings can be made with special treatments. The selection of species must be tailored to the soil conditions existing at the altered site.

ADAPTED SPECIES FOR WINDBREAK GROUP 10

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.

**Evergreen Coniferous Trees**

**Deciduous Trees:**

**Shrubs**

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**NS Not Suitable**

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 1

Description and Limitations: Soils in this group are loamy (35% clay content) and are subject to frequent flooding (run in) or a seasonal water table. The upper 12 inches lack tree carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Spring planting may be delayed for a short period because of soil wetness. Competition from weeds and grass is a primary concern in establishment of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 1

MEASURED OR ESTIMATED HEIGHT IN FEET AT ACE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-15"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Blue spruce	<i>Picea pungens</i>	NS	*13-15	15-17	19-21	21-23
Engelmann spruce	<i>Picea engelmannii</i>	NS	*13-15	15-17	24-26	25-27
Subalpine fir	<i>Abies lasiocarpa</i>	NS	NS	*12-13	14-16	14-16
White fir	<i>Abies concolor</i>	NS	*13-15	16-18	21-23	25-27
<b><u>Deciduous Trees:</u></b>						
Black cottonwood	<i>Populus trichocarpa</i>	NS	*20-25	26-30	35-37	40-45
Boxelder	<i>Acer negundo</i>	NS	NS	15-17	17-19	21-23
Golden willow	<i>Salix alba vitellina</i>	NS	*20-22	23-25	25-27	31-33
Green ash	<i>Fraxinus pennsylvanica</i>	NS	13-16	17-19	21-23	29-31
Narrowleaf cottonwood	<i>Populus angustifolia</i>	NS	*20-25	26-28	35-37	40-45
Plains cottonwood	<i>Populus sargentii</i>	NS	*20-25	26-28	35-37	40-45
Siberian crabapple	<i>Malus baccata</i>	NS	*10-12	11-13	14-17	18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*19-21	26-28	27-29	35-37
White willow	<i>Salix alba</i>	NS	*20-22	23-25	25-27	31-33
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	*6-7	6-7	10-12
Common chokecherry	<i>Prunus virginiana</i>	NS	*7-8	8-9	8-9	11-13
Common snowberry	<i>Symphoricarpos alba</i>	NS	3-4	3-4	3-4	3-4
Golden currant	<i>Ribes aureum</i>	NS	NS	*4-5	*4-5	4-5
Hansen hedgerose	<i>Rosa rugosa</i>	NS	3-4	4-5	4-5	4-5
Lilac	<i>Syringa vulgaris</i>	NS	*4-5	6-7	6-7	9-11
Redosier dogwood	<i>Cornus sericea</i>	NS	NS	NS	6-7	7-9
Rocky Mt. maple	<i>Acer glabrum</i>	NS	NS	6-8	8-10	9-11
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS	4-5	4-5	4-5
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-6	7-8	7-8	9-12
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*7-8	8-10	10-12
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4	5-6	6-7	7-8
Tatarican honeysuckle	<i>Lonicera tatarica</i>	NS	5-6	6-7	7-8	10-12
Woods' rose	<i>Rosa woodsii</i>	NS	3-4	4-5	4-5	4-5

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 1K

Description and Limitations: Soils in this group are loamy (35% clay content) and are subject to frequent flooding (run-in) or a seasonal high water table. In the upper 12 inches, they have free carbonates, have a pH of 7.8 to 9.0, or have an electrical conductivity (EC) of less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Spring planting may be delayed for a short period because of soil wetness. Competition from weeds and grass is a primary concern in establishment of trees and shrubs. Free carbonates, high pH, and a slight EC affect the selection and growth of species.

ADAPTED SPECIES FOR WINDBREAK GROUP 1K

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Blue spruce	<i>Picea pungens</i>	NS	*13-14	15-17	19-21	21-23
<b><u>Deciduous Trees:</u></b>						
Golden willow	<i>Salix alba vitellina</i>	NS	*18-21	22-24	25-27	31-33
Green ash	<i>Fraxinus pennsylvanica</i>	NS	13-15	17-19	21-23	29-31
Plains cottonwood	<i>Populus sargentii</i>	NS	*18-22	23-28	35-37	40-45
Siberian elm	<i>Ulmus pumila</i>	NS	*19-21	26-28	27-29	34-37
White willow	<i>Salix alba</i>	NS	*18-21	22-24	25-27	31-33
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	*6-7	7-8	10-12
Cocronon chokecherry	<i>Prunus virginiana</i>	NS	*7-8	8-9	8-9	11-13
Coninon snowberry	<i>Symphoricarpos alba</i>	NS	3-4	3-4	3-4	3-4
Hansen hedgerose	<i>Rosa rugosa</i>	NS	3-4	4-5	4-5	4-5
Lilac	<i>Syringa vulgaris</i>	NS	*4-5	5-7	6-7	9-11
Siberian peashrub	<i>Caragena arborescens</i>	NS	5-6	7-8	7-8	9-12
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*7-8	8-10	10-12
Skunkbush sumac	<i>Rhus tylobata</i>	NS	3-4	4-6	5-7	7-8
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	5-6	6-7	7-8	10-12
Woods' rose	<i>Rosa woodsii</i>	NS	3-4	4-5	4-5	4-5

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 2

Description and Limitations: Soils in this group are artificially drained phases of poorly drained soil. The upper 12 inches lack free carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Spring planting may be delayed for a short period because of soil wetness. Competition from weeds and grass is a primary concern in establishment of trees and shrubs. Degree of wetness and drainage affect the selection of tree and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 2

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON	SCIENTIFIC NAME	A	B	C	D	**PERM IRRIG.
		5-9"	10-14	15-19"	20"+	

**Evergreen Coniferous Trees**

**Deciduous Trees:**

**Shrubs**

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NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 2K

Description and Limitations: Soils in this group are artificially drained phases of poorly and very poorly drained soils. The upper 12 inches has free carbonates, a pH of 7.8 to 9.0, and an electrical conductivity (EC) of less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Degree of wetness and drainage, free carbonates, a high pH, or a high EC will affect the selection and growth of trees or shrubs. Competition from weeds and grass is a primary concern. Spring planting may be delayed for a short period because of soil wetness.

ADAPTED SPECIES FOR WINDBREAK GROUP 2K

MEASURED OR ESTIMATED PEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A	B	C	D	**PERM IRRIG.
		5-9"	10-14"	15-19"	20"+	

**Evergreen Coniferous Trees**

There are no soils in Wyoming in the group

**Deciduous Trees**

**Shrubs**

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**NS Not Suitable**

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 3

Description and Limitations: Soils in this group are loamy (35% clay content) and are moderately well or well drained and clayey soils with a loamy surface mantle greater than 20 inches. Available water capacity is high. In the upper 12 inches, they lack free carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are well suited for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a principal concern in the establishment of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 3

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-11"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Blue spruce	<i>Picea pungens</i>	NS	NS	15-17	17-19	21-23
Douglas fir	<i>Pseudotsuga menziesii</i>	NS	NS	19-21	24-26	25-27
Englemann spruce	<i>Picea engelmannii</i>	NS	NS	15-17	17-1	921-23
Lodgepole pine	<i>Pinus contorta</i>	NS	NS	19-21	24-26	25-27
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*11-13	15-17	17-19	23-25
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-10	9-11	11-13	19-21
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	14-16	17-19	21-23
Subalpine fir	<i>Abies lasiocarpa</i>	NS	NS	NS	12-14	12-14
<b><u>Deciduous Trees</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS	13-15	15-17	21-23
Golden willow	<i>Salix alba vitellina</i>	NS	NS	NS	NS	31-33
Green ash	<i>Fraxinus pennsylvanica</i>	NS	11-13	15-17	17-19	29-31
Narrowleaf cottonwood	<i>Populus angustifolia</i>	NS	NS	NS	NS	36-40
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	40-45
Siberian crabapple	<i>Malus baccata</i>	NS	NS	11-13	14-17	18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*19-21	25-27	27-29	34-36
White willow	<i>Salix alba</i>	NS	NS	NS	NS	31-33
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	*6-7	7-8	10-11
Common chokecherry	<i>Prunus virginiana</i>	NS	*7-8	8-9	9-10	11-13
Common snowberry	<i>Symphoricarpos alba</i>	NS	3-4	3-4	3-4	3-4
Golden currant	<i>Ribes aureum</i>	NS	NS	3-4	4-5	4-5
Hansen hedgerose	<i>Rosa rugosa</i>	NS	4-5	4-5	4-5	4-5
Lilac	<i>Syringa vulgaris</i>	NS	*4-5	5-7	7-8	9-11
Redosier dogwood	<i>Cornus serica</i>	NS	NS	NS	5-6	6-7
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS	4-5	4-5	5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-6	7-8	7-5	8-11
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*7-8	8-9	10-12
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4	4-5	5-7	6-8
Tatarian honeysuck	<i>Lonicera tatarica</i>	NS	5-6	7-8	5-9	10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 4

Description and Limitations: Soils in this group are clayey with an 8 to 20 inch loamy surface mantle and are somewhat poorly, moderately well, or well drained. Soils in this group are suited for farmstead, feedlot, and field windbreaks. High clay content below the surface mantle affects the selection and growth of tree and shrub species. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 4

COMMON NAME	SCIENTIFIC NAME	MEASURE OR ESTIMATED HEIGHT IN FEET AT ACE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP					**PERM IRRIG
		A 5-9"	B 10-11	C 15-19"	D 20"+		
<b><u>Evergreen Coniferous Trees</u></b>							
Blue spruce	<i>Picea pungens</i>	NS	NS	13-15	15-17	21-23	
Douglas fir	<i>Pseudotsuga rrenziesii</i>	NS	NS	15-17	19-21	25-27	
Engelmann spruce	<i>Picea engelmannii</i>	NS	NS	13-15	15-17	21-23	
Lodgepole pine	<i>Pinus contorta</i>	NS	NS	15-17	19-21	25-27	
Ponderosa pine	<i>Pinus ponderosa</i>	NS	11-13	14-16	16-18	23-25	
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-10	10-12	12-14	19-21	
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	NS	14-16	21-23	
Subalpine fir	<i>Abies lasiocarpa</i>	NS	NS	NS	11-13	11-13	
White fir	<i>Abies concolor</i>	NS	NS	NS	11-13	11-13	
<b><u>Deciduous Trees:</u></b>							
Boxelder	<i>Acer negundo</i>	NS	NS	*12-14	14-16	21-23	
Golden willow	<i>Salix alba vitellina</i>	NS	NS	NS	NS	31-33	
Green ash	<i>Fraxinus pennsylvanica</i>	NS	12-14	14-16	16-18	29-31	
Marrowleaf cottonwood	<i>Populus angustifolia</i>	NS	NS	NS	NS	33-36	
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	35-37	
Siberian elm	<i>Ulmus pumila</i>	NS	*18-20	23-25	25-27	35-37	
White willow	<i>Salix alba</i>	NS	NS	NS	NS	31-33	
<b><u>Shrubs</u></b>							
American plum	<i>Prunus americana</i>	NS	NS	*6-7	7-8	10-12	
Common chokecherry	<i>Prunus virginiana</i>	NS	*7-8	*8-9	8-9	11-13	
Common snowberry	<i>Symphoricarpos alba</i>	NS	3-4	3-4	3-4	3-4	
Colder currant	<i>Ribes aureum</i>	NS	NS	3-4	3-5	3-5	
hansen hedgerose	<i>Rosa rugosa</i>	NS	3-4	4-5	4-5	3-5	
Lilac	<i>Syringa vulgaris</i>	NS	*4-5	6-7	7-8	9-11	
Redosier dogwood	<i>Cornus serica</i>	NS	NS	NS	6-7	7-8	
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS	NS	4-5	5-6	
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-7	6-8	7-9	8-11	
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*7-5	9-10	10-12	
Skunkbush sumac	<i>Rhus trilobata</i>	NS	4-5	6-7	6-7	6-8	
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	5-6	6-7	8-10	10-12	

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 4C

Description and Limitations: Soils in this group have greater than 35 percent clay content throughout when mixed to 8 inches and are somewhat poorly, moderately well, or well drained. Soils in this group are suited for farmstead, feedlot, and field windbreaks. High clay content affects the selection and growth of trees and shrubs. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs. Because of high clay content, extra care will need to be exercised to make sure soil is firmly packed around roots after planting. -

ADAPTED SPECIES FOR WINDBREAK GROUP 4C

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Blue spruce	<i>Picea pungens</i>	NS	NS	NS	16-18	19-21
Englenn spruce	<i>Picea engelmannii</i>	NS	NS	NS	16-18	19-21
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*9-11	11-13	13-15	21-23
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-10	9-11	11-13	19-21
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	NS	NS	19-21
<b><u>Deciduous Trees</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS	NS	NS	19-21
Golden willow	<i>Salix elba vitellina</i>	NS	NS	NS	NS	27-29
Green ash	<i>Fraxinus pennsylvanica</i>	NS	10-12	11-13	13-15	26-28
Narrowleaf cottonwood	<i>Populus angustifolia</i>	NS	NS	NS	NS	30-34
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	30-36
Siberian elm	<i>Ulmus pumila</i>	NS	*18-20	20-22	23-25	31-33
White willow	<i>Salix alba</i>	NS	NS	NS	NS	26-28
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	*6-7	6-7	8-10
Basin big sagebrush	<i>Artemisia tridentata tridentata</i>	NS	2-3	3-4	-	-
Common chokecherry	<i>Prunus virginiana</i>	NS	*7-8	8-9	8-9	10-12
Golden currant	<i>Ribes aureum</i>	NS	NS	3-4	3-4	3-5
Hansen hedgerose	<i>Rosa rugosa</i>	NS	NS	3-4	3-4	4-5
Lilac	<i>Syringa vulgaris</i>	NS	*4-5	5-6	6-7	9-11
Redosier dogwood	<i>Cornus serica</i>	NS	NS	NS	NS	6-8
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	NS	2-3	3-4	-	-
Siberian peashrub	<i>Caragana arborescens</i>	NS	4-5	5-6	6-8	7-9
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*5-6	6-8	10-12
Skunkbush suttac	<i>Rhus trilobata</i>	NS	3-4	4-5	5-6	6-7
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	4-5	6-7	7-9	10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 5

Description and Limitations: Soils in this group are loamy with a moderate available water capacity. They are moderately well to well drained. In the upper 12 inches, they lack free carbonates, have a pH less than 7.8, and are nonsaline. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 5

COMMON NAME	SCIENTIFIC NAME	MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20				**PERM IRRIG.
		BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP				
		A 5-9"	B 10-14"	C 15-19"	D 20"+	
<b><u>Evergreen Coniferous Trees</u></b>						
Blue spruce	<i>Picea pungens</i>	NS	NS	15-17	19-21	21-23
Douglas-fir	<i>Pseudotsuga menziesii glauca</i>	NS	NS	NS	17-19	23-25
Engelmann spruce	<i>Picea engelmannii</i>	NS	NS	16-18	20-22	23-25
Lodgepole pine	<i>Pinus contorta</i>	NS	NS	16-18	21-23	25-27
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*11-13	16-18	18-20	23-25
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	9-10	10-12	12-14	17-19
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	NS	17-19	21-23
Subalpine fir	<i>Abies lasiocarpa</i>	NS	NS	NS	12-14	12-14
White fir	<i>Abies concolor</i>	NS	NS	NS	17-19	23-25
<b><u>Deciduous Trees</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS	NS	15-17	19-21
Golden willow	<i>Salix alba vitellina</i>	NS	NS	NS	NS	26-28
Green ash	<i>Fraxinus pennsylvanica</i>	NS	11-13	15-17	17-19	25-28
Narrowleaf cottonwood	<i>Populus angustifolia</i>	NS	NS	NS	NS	30-36
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	30-36
Siberian crabapple	<i>Malus baccata</i>	NS	NS	11-13	14-17	18-20
Siberian elm	<i>Ulmus pumila</i>	NS	*19-21	23-25	25-27	32-34
White willow	<i>Salix alba</i>	NS	NS	NS	NS	26-28
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	6-7	6-8	9-12
Basin big sagebrush	<i>Artemisia tridentata tridentata</i>	NS	2-3	3-4	-	-
Common chokecherry	<i>Prunus virginiana</i>	NS	*7-8	8-9	8-10	10-12
Common snowberry	<i>Symphoricarpos alba</i>	NS	NS	3-4	3-4	3-4
Golden currant	<i>Ribes aureum</i>	NS	NS	*3-4	4-5	4-5
Hansen hedgerose	<i>Rosa rugosa</i>	NS	3-4	4-5	4-5	4-5
Lilac	<i>Syringa vulgaris</i>	NS	*5-6	6-7	7-8	8-11
Redosier dogwood	<i>Comes serica</i>	NS	NS	NS	6-7	6-7
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS	NS	4-5	5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-7	7-8	7-9	8-11
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*7-8	8-9	10-12
Skunkbush sumac	<i>Rhus trilobata</i>	NS	4-5	5-6	5-6	6-7
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	5-6	7-8	8-9	10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 5K

Description and Limitations: Soils in this group are loamy with a moderate available water capacity. They are moderately well or well drained. In the upper 12 inches, they have free carbonates, a pH of 7.8 to 9.0, or have an electrical conductivity (EC) of less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Free carbonates and a high pH in the upper 12 inches affect the selection on tree and shrub species. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 5K

MEASURED OR ESTIMATED HEIGHT IN FEET AT ACE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG
<b><u>Evergreen Coniferous Trees</u></b>						
Blue spruce	<i>Picea pungens</i>	NS	NS	NS	15-17	19-21
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*9-11	11-13	13-15	21-23
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-10	9-11	11-13	16-18
<b><u>Deciduous Trees</u></b>						
Golden willow	<i>Salix alba vitellina</i>	NS	NS	NS	NS	26-28
Green ash	<i>Fraxinus pennsylvanica</i>	NS	9-11	11-13	13-15	25-27
Narrowleaf cottonwood	<i>Populus angustilia</i>	NS	NS	NS	NS	30-33
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	30-33
Siberian elm	<i>Ulmus pumila</i>	NS	*16-18	20-22	23-25	30-32
White willow	<i>Salix alba</i>	NS	NS	NS	NS	26-28
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	NS	NS	10-12
Basin big sagebrush	<i>Artemisia tridentata tridentata</i>	NS	3-4	3-4	-	-
Common snowberry	<i>Symphoricarpos alba</i>	NS	NS	3-4	3-4	-
Fourwing saltbush	<i>Atriplex canescens</i>	NS	2-3	2-3	-	-
Greasewood	<i>Sarcobatus vermiculatus</i>	NS	2-4	2-4	-	-
Lilac	<i>Syringa vulgaris</i>	NS	*4-5	8-7	7-8	-
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	NS	2-3	-	-	-
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-7	6-8	7-8	8-11
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	5-7	7-9	10-12
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	5-6	6-8	9-9	10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 6G

Description and Limitations: Soils in this group are loamy-skeletal and sandy-skeletal, and moderately well to excessively drained. Available water capacity is very low. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs. The very low AWC affects the selection and growth of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 6G

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG
<b><u>Evergreen Coniferous Trees</u></b>						
Blue spruce	<i>Picea pungens</i>	NS	NS	NS	13-15	17-19
Engleman spruce	<i>Picea engelmannii</i>	NS	NS	NS	13-15	17-19
Lodgepole pine	<i>Pinus contorta</i>	NS	NS	NS	15-17	21-23
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*9-12	13-15	15-17	21-23
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-10	9-11	11-13	17-19
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	NS	NS	20-22
White fir	<i>Abies concolor</i>	NS	NS	NS	NS	21-23
<b><u>Deciduous Trees:</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS	NS	NS	17-19
Green ash	<i>Fraxinus pennsylvanica</i>	NS	NS	11-13	13-15	25-27
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	30-35
Siberian elm	<i>Ulmus pumila</i>	NS	*15-17	19-21	23-25	28-31
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	NS	6-8	8-10
Antelope bitterbrush	<i>Purshia tridentata</i>	NS	2-3	2-3	-	-
Basin big sagebrush	<i>Artemisia tridentata tridentata</i>	NS	3-4	3-4	-	-
Conron chokecherry	<i>Prunus virginiana</i>	NS	NS	7-8	8-10	9-11
Golden current	<i>Ribes aureum</i>	NS	NS	NS	3-5	3-5
Hansen hedgrose	<i>Rosa rugosa</i>	NS	NS	3-4	4-5	4-5
Lilac	<i>Syringa vulgaris</i>	NS	NS	4-6	6-8	8-11
Redosier dogwood	<i>Cornus sericea</i>	NS	NS	NS	NS	6-8
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	NS	2-3	3-4	-	-
Saskatoon serviceberry	<i>Amelanchier alnifolia</i>	NS	NS	NS	4-5	5-7
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-7	*6-8	7-9	8-11
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*5-7	7-9	9-11
Silver sagebrush	<i>Artemisia cana</i>	NS	2-3	3-4	-	-
Skunkbush sumac	<i>Rhus trilobata</i>	NS	NS	4-5	6-7	6-8
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	5-6	6-8	7-9	10-12
Yucca	<i>Yucca glauca</i>	NS	1-2	2-3	-	-

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 6R

Description and Limitations: Soils in this group are moderately deep over bedrock. Available water capacity is very low to moderate. Soils in this group are suited for farmstead, feedlot, and field windbreaks. A very low to moderate AWC affects the selection and growth of tree and shrub species. Competition from weeds and grass is a principal concern in the establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 6R

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Blue spruce	<i>Picea pungens</i>	NS	NS	NS	15-17	19-21
Douglas-fir	<i>Pseudotsuga menziesii</i>	NS	NS	NS	17-19	19-21
Engelman spruce	<i>Picea engelmannii</i>	NS	NS	NS	15-17	19-21
Lodgepole pine	<i>Pinus contorta</i>	NS	NS	15-17	18-20	24-26
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*11-13	16-18	18-20	21-23
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	8-10	10-12	12-14	16-19
Scotch pine	<i>Pinus sylvestris</i>	NS	NS	NS	17-19	20-22
White fir	<i>Abies concolor</i>	NS	NS	NS	16-18	20-22
<b><u>Deciduous Trees</u></b>						
Boxelder	<i>Acer negundo</i>	NS	NS	NS	NS	19-21
Golden willow	<i>Salix alba vitellina</i>	NS	NS	NS	NS	26-28
Green ash	<i>Fraxinus pennsylvanica</i>	NS	10-12	12-14	14-16	23-26
Narrowleaf cottonwood	<i>Populus angustifolia</i>	NS	NS	NS	NS	30-36
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	30-36
Siberian elm	<i>Ulmus pumila</i>	NS	*18-20	21-23	24-26	30-32
White willow	<i>Salix alba</i>	NS	NS	NS	NS	26-28
<b><u>Shrubs</u></b>						
American plum	<i>Prunus americana</i>	NS	NS	NS	6-7	7-9
Antelope bitterbrush	<i>Purshia tridentata</i>	NS	2-3	2-3	-	-
Basin big sagebrush	<i>Artemisia tridentata tridentata</i>	NS	3-4	3-4	-	-
Common chokecherry	<i>Prunus virginiana</i>	NS	NS	7-	8-9	10-12
Cannon snowberry	<i>Syrphocarpos alba</i>	NS	NS	2-3	3-4	3-4
Golden currant	<i>Ribes aureum</i>	NS	NS	3-4	3-4	4-5
Hansen hedgerose	<i>Rosa rugosa</i>	NS	NS	3-4	3-4	4-5
Lilac	<i>Syringa vulgaris</i>	NS	NS	5-6	6-7	8-9
Redosier dogwood	<i>Cornus sericea</i>	NS	NS	NS	6-7	7-9
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	NS	2-3	3-4	-	-
Saskatoon serviceberry	<i>Asnelanchier alnifolia</i>	NS	NS	NS	4-5	5-6
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-6	7-8	7-9	10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*7-8	8-9	10-13
Silver sagebrush	<i>Artemisia cana</i>	NS	2-3	3-4	-	-
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4	4-5	5-6	7-10
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	5-6	7-8	8-9	10-12
Yucca	<i>Yucca glauca</i>	NS	1-2	2-3	-	-

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 6RS

Description and Limitations: Soils in this group are shallow to bedrock or duripan. Available water capacity is very low to moderate. Soils in this group are suited for farmstead, feedlot, and field windbreaks. A very low to moderate AWC affects the selection and growth of tree and shrub species. Competition from weeds and grass is a primary concern in the establishment and management of trees and shrubs. When soil is wet and winds are strong, trees are subject to windthrow or tip-over.

ADAPTED SPECIES FOR WINDBREAK GROUP 6RS

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM. IRRIG.

**Evergreen Coniferous Trees**

**Deciduous Trees**

There are no soils in  
Wyoming in this group.

**Shrubs**

---

**NS Not Suitable**

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 7

Description and Limitations: Soils in this group are deep and sandy throughout. Soils in this group are poorly suited to farmstead, feedlot, and field windbreaks. A low to moderate available water capacity affects the selection and health and growth of trees and shrubs. Soil blowing at or near the planting can adversely affect the health and vigor of developing windbreaks. Optimum growth and survival are not expected.

ADAPTED SPECIES FOR WINDBREAK GROUP 7

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A	B	C	D	**PERM IRRIG.
		5-9	10-14"	15-19"	20"+	

**Evergreen Coniferous Trees:**

**Deciduous Trees**

There are no soils in this group for this planting zone.

**Shrubs**

---

**NS Not Suitable**

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 8

**Description and Limitations:** Soils in this group are loamy with a high available water capacity. They are moderately well or well drained. In the upper 12 inches, they have free carbonates, have a p of 7.8 to 9.0, or have an EC of less than 4 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. Free carbonates and a high p affect the concern for establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 8

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-15"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees:</u></b>						
Blue spruce	<i>Picea pungens</i>	NS	NS	NS	15-17	18-24
Ponderosa pine	<i>Pinus ponderosa</i>	NS	*10-12	12-13	14-18	21-24
Rocky Mt. juniper	<i>Juniperus scopulorum</i>	NS	7-9	10-11	12-15	16-20
<b><u>Deciduous Trees:</u></b>						
Golden willow	<i>Salix aiba vitellina</i>	NS	NS	NS	NS	22-28
Green ash	<i>Fraxinus pennsylvanica</i>	NS	10-12	12-14	14-18	28-30
Narrowleaf cottonwood	<i>Populus angustifolia</i>	NS	NS	NS	NS	30-35
Plains cottonwood	<i>Populus sargentii</i>	NS	NS	NS	NS	36-40
Siberian elm	<i>Ulmus pumila</i>	NS	*15-17	15-20	21-25	30-36
White willow	<i>Salix alba</i>	NS	NS	NS	NS	22-28
<b><u>Shrubs</u></b>						
Basin big sagebrush	<i>Artemisia tridentata tridentata</i>	NS	3-4	3-4	-	-
Common snowberry	<i>Synio alba</i>	NS	NS	3-4	3-4	3-4
Fourwing saltbush	<i>Atriplex canescens</i>	NS	2-3	2-3	-	-
Lilac	<i>Syringa vulgaris</i>	NS	*4-5	6-7	7-8	9-11
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	NS	2-3	3-4	-	-
Siberian peashrub	<i>Caragana arborescens</i>	NS	5-6	6-7	7-8	10-14
Silver buffaloberry	<i>Shepherdia argentea</i>	NS	NS	*5-6	7-9	11-13
Skunkbush sumac	<i>Rhus trilobata</i>	NS	3-4	5-6	7-8	8-10
Tatarian honeysuckle	<i>Lonicera tatarica</i>	NS	5-6	6-7	8-9	11-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 9G

Description and Limitations: Soils in this group are deep with a water table within 5 feet of the surface; some are subject to flooding or ponding. In the upper 12 inches, they have a pH of greater than 7.8 and an EC 4 - 16 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field wind breaks. High pH and low to moderate EC in the upper 12 inches affect the selection and growth of trees and shrubs. Competition from grass and weeds is a primary concern for establishment and management of trees and shrubs. Spring planting may be delayed for a short period because of soil wetness.

ADAPTED SPECIES FOR WINDBREAK GROUP 9G

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.
<b><u>Evergreen Coniferous Trees</u></b>						
Rocky Mt. juniper	Juniperus scopulorum	NS	*7-8	8-9	9-10	16-20
<b><u>Deciduous Trees</u></b>						
Golden willow	Salix alba vitellina	NS	NS	NS	26-30	32-36
Green ash	Fraxinus pennsylvanica	NS	12-14	16-17	18-20	26-30
Plains cottonwood	Populus sargentii	NS	NS	NS	30-34	40-45
Siberian elm	Ulmus pumila	NS	*18-20	21-24	25-30	31-35
White willow	Salix alba	NS	NS	NS	26-30	32-36
<b><u>Shrubs</u></b>						
Fourwing saltbush	Atriplex canescens	NS	2-3	2-3	-	-
Greasewood	Sarcobatus vermiculatus	NS	2-3	4-5	-	-
Lilac	Syringa vulgaris	NS	*4-5	5-7	6-7	9-11
Rubber rabbitbrush	Chrysothamnus nauseosus	NS	2-3	2-3	-	-
Silver buffaloberry	Shepherdia argentea	NS	NS	7-8	8-9	10-12
Skunkbush siunac	Rhus trilobata	NS	NS	5-6	6-7	7-8
Tatarian honeysuckle	Lonicera tatarica	NS	5-6	6-7	7-8	10-12

NS Not Suitable

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 9N

Description and Limitations: Soils in this group are deep, do not have a water table within 5 feet of the surface, and are not subject to flooding or ponding. In the upper 12 inches, they have a pH of greater than 7.8 and an EC 4-16 mmhos/cm. Soils in this group are suited for farmstead, feedlot, and field windbreaks. High pH and low to moderate EC in the upper 12 inches affect the selection and growth of trees and shrubs. Competition from grass and weeds is a primary concern for establishment and management of trees and shrubs.

ADAPTED SPECIES FOR WINDBREAK GROUP 9N

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A	B	C	D	**PERM IRRIG.
		5-9"	10-14"	15-19"	20"+	

**Evergreen Coniferous Trees:**

**Deciduous Trees**

There are no soils in  
 this group for this  
 planting zone

**Shrubs**

---

**NS Not Suitable**

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

WINDBREAK GROUP 10

Description and Limitations: Soils in this group have one or more characteristics which severely limit planting, survival, or growth of trees and shrubs. Examples include shallow and very shallow soils, soils with a very low available water capacity, poorly and very poor drained soils that are saturated or ponded throughout the growing season, and toxic soils. Soils in this group are usually not recommended for farmstead, feedlot, and field windbreaks. However, onsite investigations may reveal that some tree and shrub plantings can be made with special treatments. The selection of species must be tailored to the soil conditions existing at the altered site.

ADAPTED SPECIES FOR WINDBREAK GROUP 10

MEASURED OR ESTIMATED HEIGHT IN FEET AT AGE 20 BY MOISTURE (ANNUAL PRECIPITATION) SUBGROUP						
COMMON NAME	SCIENTIFIC NAME	A 5-9"	B 10-14"	C 15-19"	D 20"+	**PERM IRRIG.

**Evergreen Coniferous Trees:**

**Deciduous Trees:**

**Shrubs**

---

**NS Not Suitable**

- There is a more desirable species to plant in these soils and moisture conditions.

\* Supplemental watering will be needed for establishment. Supplemental watering refers only to the establishing of woody plantings on nonirrigated sites.

\*\* Permanent irrigation.

1/ Serious decline in vigor 8-15 years.

2/ Serious decline in vigor 4-6 years.

12/9/2009

SOIL MANUSCRIPT TABLES  
FOR EXPECTED HEIGHTS OF  
SELECTED WOODY SPECIES  
AT AGE 20, BY  
PLANTING ZONE,  
WINDBREAK SUITABILITY GROUP,  
AND PRECIPITATION SUBGROUP

TABLE U1.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE I

(Dashes indicate that the species is not suited to the soils in the group)

Woody species	Group 1				Group 1K				Group 3				Group 4				Group 4C					
	Precipitation:				Precipitation:				Precipitation:				Precipitation:				Precipitation:					
	5- 9"	10- 14"	15- 19"	Irri- gated	5- 9"	10- 14"	15- 19"	Irri- gated	5- 9"	10- 14"	15- 19"	Irri- gated	5- 9"	10- 14"	15- 19"	Irri- gated	5- 9"	10- 14"	15- 19"	Irri- gated		
Conifers: +																						
Austrian pine-----	-	-	17:	22	-	-	-	-	-	-	*16:	22	-	-	15:	22	-	-	-	-		
Blue spruce-----	-	*12:	16:	22	-	-	16:	22	-	-	16:	22	-	-	-	20	-	-	-	19		
Eastern redcedar-----	-	15:	18:	23	-	15:	17:	22	-	10:	13:	21	-	10:	12:	20	-	8:	11:	20		
Ponderosa pine-----	-	*16:	18:	22	-	*16:	18:	23	-	*14:	16:	22	-	*12:	15:	22	-	*10:	12:	21		
Rocky Mountain juniper--	-	10:	14:	21	-	10:	14:	21	-	8:	10:	18	-	8:	10:	18	-	8:	10:	18		
Scotch pine-----	-	-	*17:	21	-	-	-	-	-	-	*15:	20	-	-	-	20	-	-	-	20		
Deciduous trees:																						
Boxelder-----	-	-	*16:	21	-	-	-	-	-	-	-	20	-	-	-	19	-	-	-	19		
Golden willow-----	-	*20:	*24:	31	-	*20:	*24:	31	-	-	-	29	-	-	-	29	-	-	-	29		
Green ash-----	-	*14:	18:	28	-	*14:	17:	27	-	*13:	16:	28	-	*13:	15:	28	-	*10:	12:	25		
Honeylocust-----	-	15:	19:	28	-	15:	19:	28	-	14:	17:	26	-	13:	16:	26	-	12:	14:	24		
Plains cottonwood-----	-	*29:	*31:	41	-	*29:	31:	41	-	-	-	41	-	-	-	41	-	-	-	41		
<del>Russian olive-----</del>	<del>-</del>	<del>*12:</del>	<del>15:</del>	<del>18:</del>	<del>24</del>	<del>-</del>	<del>*12:</del>	<del>16:</del>	<del>18:</del>	<del>24</del>	<del>-</del>	<del>13:</del>	<del>15:</del>	<del>23</del>	<del>-</del>	<del>11:</del>	<del>14:</del>	<del>22</del>	<del>-</del>	<del>9:</del>	<del>11:</del>	<del>22</del>
Siberian crabapple-----	-	*11:	13:	19	-	-	-	-	-	-	12:	19	-	-	12:	19	-	-	11:	19		
Siberian elm-----	-	*20:	24:	33	-	*20:	24:	33	-	*18:	23:	33	-	*17:	21:	33	-	*15:	19:	31		
Shrubs:																						
American plum-----	-	-	*7:	10	-	-	*7:	10	-	-	*7:	10	-	-	*7:	10	-	-	*7:	10		
Antelope bitterbrush-----	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Basin big sagebrush-----	-	-	-	-	-	-	-	-	2	4	5	-	-	-	-	-	-	-	-	-		
Common chokecherry-----	-	*7:	*7:	11	-	*7:	*7:	11	-	*7:	*8:	11	-	*7:	8:	11	-	*7:	8:	11		
Fourwing saltbush-----	2	2	-	-	2	2	-	-	2	2	-	-	2	2	2	3	2	2	-	-		
Golden currant-----	-	-	*4:	6	-	-	-	-	-	-	*4:	6	-	-	*4:	6	-	-	-	6		
Greasewood-----	-	-	-	-	-	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-		
Lilac-----	-	*5:	7:	10	-	*5:	7:	10	-	*5:	7:	10	-	*5:	7:	10	-	*4:	5:	9		
Nanking cherry-----	-	*3:	5:	8	-	-	-	-	-	*3:	5:	8	-	*3:	5:	8	-	*3:	5:	8		
Peking cotoneaster-----	-	*3:	5:	9	-	-	-	-	-	*3:	4:	8	-	*3:	4:	8	-	-	4:	8		
Redosier dogwood-----	-	-	4:	8	-	-	-	-	-	-	-	8	-	-	-	8	-	-	-	7		
Rubber rabbitbrush-----	-	-	-	-	2	3	-	-	-	-	-	-	-	-	-	-	2	2	-	-		
Rugosa rose-----	-	2:	4:	6	-	-	-	-	-	3:	4:	6	-	3:	4:	6	-	-	3:	5		
Saskatoon serviceberry-----	-	-	*4:	7	-	-	-	-	-	-	-	5	-	-	-	5	-	-	-	5		
Siberian peashrub-----	-	7:	9:	14	-	6:	9:	14	-	7:	8:	12	-	6:	7:	12	-	4:	5:	12		
Silver buffaloberry-----	-	-	*7:	12	-	-	*7:	12	-	-	*7:	11	-	-	*7:	10	-	-	-	10		
Silver sagebrush-----	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Skunkbush sumac-----	-	3:	5:	9	-	3:	5:	9	-	3:	5:	9	-	3:	5:	9	-	3:	4:	8		
Tatarian honeysuckle-----	-	6:	8:	11	-	6:	8:	11	-	5:	7:	11	-	5:	7:	11	-	4:	6:	11		
Western sandcherry-----	-	2:	3:	3	-	-	-	-	-	2:	3:	3	-	2:	3:	3	-	-	-	3		
Yucca-----	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

See footnote at end of table.

TABLE U1.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP,  
IN PLANTING ZONE I--Continued

Woody species	Group 5				Group 5K				Group 6G				Group 6R				
	Precipitation:				Precipitation:				Precipitation:				Precipitation:				
	5- 9"	10- 14"	15- 19"	Irrig- gated	5- 9"	10- 14"	15- 19"	Irrig- gated	5- 9"	10- 14"	15- 19"	Irrig- gated	5- 9"	10- 14"	15- 19"	Irrig- gated	
Conifers: <sup>+</sup>																	
Austrian pine-----	-	-	*16	22	-	-	-	-	-	-	-	16	-	-	22	*13	22
Blue spruce-----	-	-	-	21	-	-	-	21	-	-	-	21	-	-	-	-	21
Eastern redcedar-----	-	10	13	20	-	8	10	20	-	8	10	20	-	8	11	20	20
Ponderosa pine-----	-	*13	15	22	-	*10	13	22	-	*10	13	22	-	*11	13	22	22
Rocky Mountain juniper--	-	8	10	17	-	8	10	17	-	8	10	18	-	8	10	18	18
Scotch pine-----	-	-	*15	20	-	-	-	-	-	-	13	20	-	-	13	20	20
Deciduous trees:																	
Boxelder-----	-	-	-	20	-	-	-	-	-	-	-	20	-	-	-	-	20
Golden willow-----	-	-	-	29	-	-	-	-	-	-	-	-	-	-	-	-	29
Green ash-----	-	*12	15	27	-	*11	13	28	-	*13	28	-	*11	14	28	28	28
Honeylocust-----	-	12	15	26	-	11	14	28	-	13	26	-	14	17	27	27	27
Plains cottonwood-----	-	-	-	41	-	-	-	41	-	-	-	35	-	-	-	-	35
<del>Russian olive-----</del>	-	<del>11</del>	<del>14</del>	<del>23</del>	-	<del>9</del>	<del>11</del>	<del>23</del>	-	<del>10</del>	<del>13</del>	<del>23</del>	-	<del>11</del>	<del>14</del>	<del>24</del>	<del>24</del>
Siberian crabapple-----	-	-	12	19	-	-	-	-	-	-	19	-	-	*12	19	19	19
Siberian elm-----	-	*17	22	33	-	*16	20	33	-	*15	20	33	-	17	21	33	33
Shrubs:																	
American plum-----	-	-	*7	10	-	-	-	10	-	-	-	10	-	-	-	-	10
Antelope bitterbrush-----	-	-	-	-	-	-	-	-	-	2	3	-	-	2	3	-	-
Basin big sagebrush-----	2	4	5	-	2	3	-	-	2	3	4	-	2	3	4	-	-
Common chokecherry-----	-	*6	8	11	-	-	7	11	-	-	*7	11	-	-	*7	11	11
Fourwing saltbush-----	2	2	-	-	2	2	2	-	2	2	2	-	2	2	2	-	-
Golden currant-----	-	-	-	6	-	-	-	-	-	-	-	6	-	-	-	-	6
Greasewood-----	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-
Lilac-----	-	*5	6	10	-	*4	5	10	-	-	*5	9	-	-	*4	9	9
Nanking cherry-----	-	-	*4	8	-	-	-	-	-	-	-	7	-	-	*4	8	8
Peking cotoneaster-----	-	-	*4	8	-	-	-	-	-	-	*4	8	-	-	*4	8	8
Redosier dogwood-----	-	-	-	8	-	-	-	-	-	-	-	7	-	-	-	-	7
Rubber rabbitbrush-----	-	-	-	-	2	2	-	-	2	2	3	-	2	3	3	-	-
Rugosa rose-----	-	2	3	6	-	-	-	-	-	2	3	6	-	2	3	6	6
Saskatoon serviceberry--	-	-	-	5	-	-	-	5	-	-	-	5	-	-	-	-	5
Siberian peashrub-----	-	5	6	12	-	4	6	12	-	5	6	12	-	5	7	12	12
Silver buffaloberry-----	-	-	*6	11	-	-	*6	11	-	-	*5	11	-	-	*7	11	11
Silver sagebrush-----	-	-	-	-	-	-	-	-	-	2	2	-	-	2	2	-	-
Skunkbush sumac-----	-	3	5	8	-	3	5	8	-	-	3	8	-	*3	5	8	8
Tatarian honeysuckle-----	-	5	7	11	-	4	6	11	-	-	6	11	-	*3	7	11	11
Western sandcherry-----	-	2	3	3	-	-	-	-	-	-	2	3	-	-	2	3	3
Yucca-----	-	-	-	-	-	-	-	-	1	1	2	-	1	1	2	-	-

See footnote at end of table.

TABLE U1.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP,  
IN PLANTING ZONE I--Continued

Woody species	Group 7				Group 8				Group 9G				Group 9N				
	Precipitation:				Precipitation:				Precipitation:				Precipitation:				
	5- 9"	10- 14"	15- 19": gated	Irrig- ated	5- 9"	10- 14"	15- 19": gated	Irrig- ated	5- 9"	10- 14"	15- 19": gated	Irrig- ated	5- 9"	10- 14"	15- 19": gated	Irrig- ated	
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	
Conifers: +																	
Austrian pine-----	-	-	*12:	22	-	-	-	-	-	-	-	-	-	-	-	-	
Blue spruce-----	-	-	-	21	-	-	-	21	-	-	-	-	-	-	-	-	
Eastern redcedar-----	-	*7	9	20	-	8	10:	20	-	-	10:	17	-	-	*7	17	
Ponderosa pine-----	-	-	*11:	22	-	*11:	13:	22	-	-	-	-	-	*9	11:	21	
Rocky Mountain juniper-----	-	*6	10:	18	-	8	10:	17	-	-	*7	9	18	-	*5	6	16
Scotch pine-----	-	-	*12:	20	-	-	-	-	-	-	-	-	-	-	-	-	
Deciduous trees:																	
Boxelder-----	-	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	
Golden willow-----	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Green ash-----	-	-	12:	28	-	11:	13:	30	-	-	16:	27	-	-	*11:	24	
Honeylocust-----	-	-	13:	26	-	11:	14:	29	-	-	14:	17:	27	-	-	-	
Plains cottonwood-----	-	-	-	30	-	-	-	41	-	-	-	27:	41	-	-	-	
<del>Russian olive-----</del>	-	-	*13:	<del>23</del>	-	<del>9</del>	<del>11:</del>	<del>22</del>	-	-	<del>13:</del>	<del>16:</del>	<del>23</del>	-	-	-	
Siberian crabapple-----	-	-	-	19	-	-	-	-	-	-	-	-	-	-	-	-	
Siberian elm-----	-	-	16:	32	-	17:	20:	33	-	-	*16:	21:	32	-	*10:	12:	30
Shrubs:																	
American plum-----	-	-	-	10	-	-	-	10	-	-	-	-	-	-	-	-	
Antelope bitterbrush-----	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Basin big sagebrush-----	-	-	-	-	2:	3	-	-	-	-	-	-	-	3	-	-	
Common chokecherry-----	-	-	-	11	-	-	7	11	-	-	-	-	-	-	-	-	
Fourwing saltbush-----	-	-	-	2	2	-	-	2	2	2	-	2	2	-	-	-	
Golden currant-----	-	-	-	6	-	-	-	-	-	3	4	-	-	-	-	-	
Greasewood-----	-	-	-	-	-	-	-	2	3	2	-	2	2	-	-	-	
Lilac-----	-	-	*5:	9	-	4	5	10	-	*5:	6	10	-	-	5	10	
Nanking cherry-----	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	
Peking cotoneaster-----	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	
Redosier dogwood-----	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	
Rubber rabbitbrush-----	-	*2:	3	-	2:	2	-	-	2:	2:	3	-	-	2	-	-	
Rugosa rose-----	-	*2:	3	6	-	-	-	-	-	-	-	-	-	-	-	-	
Saskatoon serviceberry-----	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	
Siberian peashrub-----	-	*4:	6	12	-	5	6	12	-	5	8	12	-	4	5	10	
Silver buffaloberry-----	-	-	-	11	-	-	6	12	-	-	7	11	-	-	-	-	
Silver sagebrush-----	2	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	
Skunkbush sumac-----	-	-	-	-	3	5	8	-	3	5	9	-	3	4	9	-	
Tatarian honeysuckle-----	-	-	5	11	-	5	7	11	-	6	7	11	-	4	5	11	
Western sandcherry-----	-	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	
Yucca-----	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	

\* Supplemental water is needed during the 3- to 5-year establishment period.

- Not suitable for planting.

+ New plantings in high wind prone areas need protection from the wind during the 3- to 5-year establishment period.  
A mid-winter watering is also recommended to prevent foliar desiccation.

TABLE U2.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE II

(Dashes indicate that the species is not suited to the soils in the group)

Woody Species	Group 1			Group 1K			Group 3			Group 4			Group 4C			Group 5			Group 5K			
	Precipitation			Precipitation			Precipitation			Precipitation			Precipitation			Precipitation			Precipitation			
	5- 9"	10- 14"	Irrig- gated	5- 9"	10- 14"	Irrig- gated	5- 9"	10- 14"	Irrig- gated	5- 9"	10- 14"	Irrig- gated	5- 9"	10- 14"	Irrig- gated	5- 9"	10- 14"	Irrig- gated	5- 9"	10- 14"	Irrig- gated	
Conifers: <sup>+</sup>																						
Austrian pine	-	-	23	-	-	-	-	-	23	-	-	23	-	-	-	-	-	23	-	-	-	
Blue spruce	-	*11	22	-	-	22	-	-	23	-	-	20	-	-	19	-	-	21	-	-	22	
Eastern redcedar	-	16	22	-	15	22	-	10	22	-	10	22	-	8	20	-	10	20	-	-	8	
Ponderosa pine	-	*13	24	-	*16	24	-	*14	24	-	12	24	-	*10	22	-	*10	22	-	-	*10	
Rocky Mountain juniper	-	10	20	-	10	20	-	9	20	-	9	20	-	9	19	-	9	19	-	-	8	
Scotch pine	-	-	21	-	-	-	-	-	20	-	-	20	-	-	-	-	-	22	-	-	-	
Deciduous trees:																						
Boxelder	-	-	21	-	-	-	-	-	21	-	-	21	-	-	21	-	-	21	-	-	-	
Golden willow	-	*20	31	-	*20	31	-	-	29	-	-	29	-	-	29	-	-	29	-	-	-	
Green ash	-	14	30	-	*14	30	-	12	30	-	*12	30	-	*10	27	-	*11	28	-	-	*10	
Honeylocust	-	15	30	-	15	30	-	14	30	-	14	30	-	12	28	-	13	28	-	-	12	
Plains cottonwood	-	*28	41	-	-	41	-	-	41	-	-	42	-	-	42	-	-	42	-	-	42	
<del>Russian olive</del>	<del>*12</del>	<del>15</del>	<del>25</del>	<del>*12</del>	<del>16</del>	<del>25</del>	-	<del>14</del>	<del>25</del>	-	<del>11</del>	<del>25</del>	-	<del>9</del>	<del>22</del>	-	<del>9</del>	<del>23</del>	-	-	<del>8</del>	
Siberian crabapple	-	*11	19	-	-	-	-	-	19	-	-	19	-	-	19	-	-	19	-	-	-	
Siberian elm	-	*20	36	-	*20	36	-	*18	36	-	*17	36	-	*15	32	-	*17	33	-	-	16	
Shrubs:																						
American plum	-	*7	10	-	-	11	-	-	11	-	-	10	-	-	10	-	-	10	-	-	10	
Antelope bitterbrush	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Basin big sagebrush	2	4	-	-	-	-	2	4	-	2	4	-	-	-	-	2	4	-	2	4	-	
Common chokecherry	-	*7	12	-	*7	12	-	*7	12	-	7	12	-	*7	10	-	*7	11	-	-	11	
Fourwing saltbush	2	3	-	2	3	-	2	3	-	2	3	-	2	3	-	2	3	-	2	3	-	
Golden currant	-	-	6	-	-	-	-	-	6	-	-	6	-	-	6	-	-	6	-	-	-	
Greasewood	-	-	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	
Lilac	-	*5	10	-	5	10	-	*5	10	-	*5	10	-	*4	9	-	*4	9	-	-	*4	
Nanking cherry	-	*3	9	-	-	-	-	*5	8	-	*3	8	-	*3	8	-	-	8	-	-	-	
Peking cotoneaster	-	*4	-	-	-	-	-	*4	8	-	*4	8	-	-	8	-	-	8	-	-	-	
Redosier dogwood	-	-	7	-	-	-	-	-	8	-	-	8	-	-	7	-	-	8	-	-	-	
Rubber rabbitbrush	-	-	2	3	-	-	-	-	-	-	-	2	3	-	3	-	3	4	-	2	3	
Rugosa rose	-	3	7	-	-	-	-	4	6	-	4	6	-	-	6	-	3	6	-	-	-	
Saskatoon serviceberry	-	-	7	-	-	-	-	5	5	-	5	5	-	5	5	-	5	5	-	5	5	
Siberian peashrub	-	8	13	-	5	12	-	7	14	-	6	13	-	4	9	-	5	12	-	5	10	
Silver buffaloberry	-	-	12	-	-	11	-	-	12	-	-	11	-	-	11	-	-	12	-	-	12	
Silver sagebrush	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Skunkbush sumac	-	4	9	-	4	10	-	4	8	-	4	8	-	7	7	-	3	9	-	3	8	
Tatarian honeysuckle	-	7	11	-	5	11	-	5	11	-	5	11	-	4	10	-	5	11	-	5	11	
Western sandcherry	-	2	3	-	-	-	-	2	3	-	2	3	-	3	3	-	2	3	-	3	-	
Yucca	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

See footnote at end of table.

TABLE U2.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP,  
IN PLANTING ZONE II--Continued

Woody Species	Group 6G			Group 6R			Group 7			Group 8			Group 9C			Group 9N		
	Precipitation			Precipitation			Precipitation			Precipitation			Precipitation			Precipitation		
	5- 9"	10- 14"	Irri- gated															
Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers: <sup>+</sup>																		
Austrian pine-----	-	-	23	-	-	23	-	-	20	-	-	-	-	-	-	-	-	-
Blue spruce-----	-	-	21	-	-	21	-	-	21	-	-	21	-	-	-	-	-	-
Eastern redcedar-----	-	8	18	-	8	20	-	*7	18	-	8	22	-	-	18	-	-	18
Ponderosa pine-----	-	*10	22	-	*10	22	-	-	20	-	*10	24	-	-	-	-	*9	22
Rocky Mountain juniper--	-	8	17	-	9	17	-	*7	17	-	8	20	-	*7	15	-	*5	15
Scotch pine-----	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Deciduous trees:																		
Boxelder-----	-	-	21	-	-	21	-	-	21	-	-	-	-	-	-	-	-	-
Golden willow-----	-	-	-	-	-	29	-	-	-	-	-	-	-	-	-	-	-	-
Green ash-----	-	-	26	-	*11	26	-	-	26	-	10	30	-	-	28	-	-	26
Honeylocust-----	-	-	26	-	14	26	-	-	26	-	12	30	-	13	28	-	13	22
Plains cottonwood-----	-	-	35	-	-	35	-	-	30	-	-	42	-	-	40	-	-	32
<del>Russian olive</del> -----	-	10	22	-	10	23	-	-	23	-	8	25	-	12	23	-	8	23
Siberian crabapple-----	-	-	-	-	-	19	-	-	19	-	-	-	-	-	-	-	-	-
Siberian elm-----	-	*15	30	-	*17	31	-	-	30	-	16	36	-	16	33	-	*10	30
Shrubs:																		
American plum-----	-	-	10	-	-	10	-	-	10	-	-	11	-	-	-	-	-	-
Antelope bitterbrush-----	-	2	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Basin big sagebrush-----	2	3	-	2	4	-	-	-	-	2	4	-	-	-	-	-	4	-
Common chokecherry-----	-	-	10	-	-	11	-	-	10	-	-	11	-	-	-	-	-	-
Fourwing saltbush-----	2	3	-	2	3	-	-	-	-	2	3	-	2	3	-	2	3	-
Golden currant-----	-	-	6	-	-	6	-	-	6	-	-	-	-	-	-	-	-	-
Greasewood-----	-	-	-	-	-	-	-	-	-	-	-	-	2	5	-	2	3	-
Lilac-----	-	-	8	-	-	8	-	-	8	-	4	9	-	*5	9	-	-	9
Nanking cherry-----	-	-	7	-	-	8	-	-	7	-	-	-	-	-	-	-	-	-
Peking cotoneaster-----	-	-	6	-	-	6	-	-	8	-	-	-	-	-	-	-	-	-
Redosier dogwood-----	-	-	7	-	-	7	-	-	7	-	-	-	-	-	-	-	-	-
Rubber rabbitbrush-----	2	4	-	2	4	-	2	4	-	2	4	-	-	4	-	-	3	-
Rugosa rose-----	-	3	6	-	3	6	-	-	6	-	-	-	-	-	-	-	-	-
Saskatoon serviceberry--	-	-	5	-	-	5	-	-	5	-	-	-	-	-	-	-	-	-
Siberian peashrub-----	-	5	10	-	5	10	-	-	10	-	5	10	-	5	10	-	4	8
Silver buffaloberry-----	-	-	12	-	-	11	-	-	11	-	-	11	-	-	11	-	-	10
Silver sagebrush-----	-	3	-	-	3	-	-	3	-	-	-	-	-	-	-	-	-	-
Skunkbush sumac-----	-	4	8	-	*4	9	-	-	10	-	4	8	-	4	8	-	3	8
Tatarian honeysuckle-----	-	-	10	-	*5	10	-	-	10	-	5	11	-	5	10	-	4	10
Western sandcherry-----	-	-	3	-	-	3	-	-	3	-	-	-	-	-	-	-	-	-
Yucca-----	1	1	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	-

\* Supplemental water is needed during the 3- to 5-year establishment period.

- Not suitable for planting

+ New plantings in high wind prone areas need protection from the wind during the 3- to 5-year establishment period.

A mid-winter watering is also recommended to prevent foliar desiccation.

TABLE U3.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE III

(Dashes indicate that the species is not suited to the soils in the group)

Woody species	Group 1				Group 1K				Group 3				Group 4			
	Precipitation:				Precipitation:				Precipitation:				Precipitation:			
	10-	15-	19"	20+"	10-	15-	19"	20+"	10-	15-	19"	20+"	10-	15-	19"	20+"
	Ft	Ft	Ft	Ft												
Conifers:																
Austrian pine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blue spruce	*14:	16:	20:	22	*13:	16:	20:	22	-	16:	18:	22	-	14:	16:	22
Eastern redcedar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lodgepole pine	-	-	-	-	-	-	-	-	-	20:	25:	26	-	16:	20:	26
Ponderosa pine	-	-	-	-	-	-	-	-	*12:	16:	18:	24	*12:	15:	17:	24
Rocky Mountain juniper	-	-	-	-	-	-	-	-	9:	10:	12:	20	9:	11:	13:	20
Scotch pine	-	-	-	-	-	-	-	-	-	15:	18:	22	-	-	15:	20
Deciduous trees:																
Boxelder	-	16:	18:	22	-	-	-	-	-	14:	16:	22	-	*13:	15:	20
Golden willow	*21:	24:	26:	32	*19:	23:	26:	32	-	-	-	32	-	-	-	32
Green ash	14:	18:	22:	30	14:	18:	20:	30	12:	16:	18:	30	13:	15:	17:	30
Honeylocust	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plains cottonwood	*22:	27:	36:	42	*20:	25:	38:	42	-	-	-	-	42:	-	-	36
Russian olive	<del>15:</del>	<del>18:</del>	<del>20:</del>	<del>25</del>	<del>15:</del>	<del>18:</del>	<del>20:</del>	<del>25</del>	<del>11:</del>	<del>13:</del>	<del>16:</del>	<del>25</del>	<del>11:</del>	<del>13:</del>	<del>16:</del>	<del>25</del>
Siberian crabapple	*11:	12:	15:	19	-	-	-	-	-	12:	15:	19	-	-	-	-
Siberian elm	*20:	27:	28:	36	*20:	27:	28:	35	*20:	26:	28:	35	*19:	24:	26:	36
Shrubs:																
American plum	-	*6:	6:	11	-	*6:	7:	11	-	*6:	7:	11	-	*6:	7:	11
Antelope bitterbrush	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Basin big sagebrush	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Common chokecherry	*7:	8:	8:	12	*7:	8:	8:	12	*7:	8:	9:	12	*7:	8:	8:	12
Fourwing saltbush	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Golden currant	-	*4:	4:	4	-	-	-	-	-	4:	4:	4	-	3:	4:	4
Greasewood	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lilac	*4:	6:	6:	10	*4:	6:	6:	10	*4:	6:	7:	10	*4:	6:	7:	10
Nanking cherry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peking cotoneaster	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Redosier dogwood	-	-	6:	8	-	-	-	-	-	-	5:	6	-	-	6:	7
Rubber rabbitbrush	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rugosa rose	3:	4:	4:	4	3:	4:	4:	4	4:	4:	4:	4	3:	4:	4:	4
Saskatoon serviceberry	-	4:	4:	4	-	-	-	-	-	4:	4:	5	-	-	4:	5
Siberian peashrub	5:	7:	7:	10	5:	7:	7:	10	5:	7:	7:	9	6:	7:	8:	9
Silver buffaloberry	-	*7:	9:	11	-	*7:	9:	11	-	*7:	8:	11	-	*7:	9:	11
Silver sagebrush	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Skunkbush sumac	3:	5:	6:	7	3:	5:	6:	7	3:	4:	6:	7	4:	6:	6:	7
Tatarian honeysuckle	5:	6:	7:	11	5:	6:	7:	11	5:	7:	8:	11	5:	6:	9:	11
Western sandcherry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yucca	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

See footnote at end of table.

TABLE U3.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP,  
IN PLANTING ZONE III--Continued

Woody species	Group 4C				Group 5				Group 5K				Group 6G			
	Precipitation:				Precipitation:				Precipitation:				Precipitation:			
	10-	15-	Irri-	10-	15-	Irri-	10-	15-	Irri-	10-	15-	Irri-	10-	15-	Irri-	
	14":	19":	20+":	gated:												
Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers:																
Austrian pine-----	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blue spruce-----	-	-	17:	20	-	16:	20:	22	-	-	16:	20	-	-	14:	18
Eastern redcedar-----	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lodgepole pine-----	-	-	-	-	-	17:	22:	26	-	-	-	-	-	-	16:	22
Ponderosa pine-----	*10:	12:	14:	22	*12:	17:	19:	24	*10:	12:	14:	22	*10:	14:	16:	22
Rocky Mountain juniper---	9:	10:	12:	20	9:	11:	13:	18	9:	10:	12:	17	9:	10:	12:	18
Scotch pine-----	-	-	-	20	-	-	18:	20	-	-	-	-	-	-	-	21
Deciduous trees:																
Boxelder-----	-	-	-	20	-	-	16:	20	-	-	-	-	-	-	-	18
Golden willow-----	-	-	-	28	-	-	-	27	-	-	-	27	-	-	-	-
Green ash-----	11:	12:	14:	27	12:	16:	18:	26	10:	12:	14:	26	-	12:	14:	26
Honeylocust-----	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plains cottonwood-----	-	-	-	33	-	-	-	33	-	-	-	31	-	-	-	32
<del>Russian olive</del> -----	<del>10:</del>	<del>11:</del>	<del>13:</del>	<del>22</del>	<del>10:</del>	<del>13:</del>	<del>15:</del>	<del>23</del>	<del>9:</del>	<del>11:</del>	<del>13:</del>	<del>25</del>	<del>10:</del>	<del>12:</del>	<del>14:</del>	<del>23</del>
Siberian crabapple-----	-	12:	15:	19	-	-	-	-	-	-	-	-	-	-	-	-
Siberian elm-----	*19:	21:	24:	32	*20:	24:	26:	33	*17:	21:	24:	31	*16:	20:	24:	29
Shrubs:																
American plum-----	-	*6:	6:	9	-	6:	7:	10	-	-	-	11	-	-	7:	9
Antelope bitterbrush-----	-	-	-	-	-	-	-	-	-	-	-	-	2:	3:	-	-
Basin big sagebrush-----	2:	3:	-	-	2:	3:	-	-	3:	3:	-	-	3:	3:	-	-
Common chokecherry-----	*7:	8:	8:	11	*7:	8:	9:	11	-	7:	9:	10	-	7:	8:	11
Fourwing saltbush-----	-	-	-	-	-	-	-	-	2:	2:	-	-	-	-	-	-
Golden currant-----	-	3:	3:	4	-	*3:	4:	4	-	-	-	-	-	-	4:	4
Greasewood-----	-	-	-	-	-	-	-	-	3:	3:	-	-	-	-	-	-
Lilac-----	*4:	5:	6:	10	*5:	6:	7:	9	*4:	6:	7:	10	-	5:	7:	9
Nanking cherry-----	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peking cotoneaster-----	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Redosier dogwood-----	-	-	-	7	-	-	6:	6	-	-	-	-	-	-	-	-
Rubber rabbitbrush-----	2:	3:	-	-	-	-	-	-	2:	-	-	-	2:	3:	-	-
Rugosa rose-----	-	3:	3:	4	3:	4:	4:	4	4:	-	-	-	-	3:	4:	4
Saskatoon serviceberry---	-	-	-	-	-	-	4:	5	-	-	-	-	-	-	4:	6
Siberian peashrub-----	4:	5:	7:	8	6:	7:	8:	9	6:	7:	7:	9	6:	7:	8:	9
Silver buffaloberry-----	-	*5:	7:	11	-	*7:	8:	11	-	*6:	8:	11	-	*6:	8:	10
Silver sagebrush-----	-	-	-	-	-	-	-	-	-	-	-	-	2:	3:	-	-
Skunkbush sumac-----	3:	4:	5:	6	4:	5:	5:	6	-	-	-	-	-	4:	6:	7
Tatarian honeysuckle-----	4:	6:	8:	11	5:	7:	8:	11	5:	7:	8:	11	5:	7:	8:	11
Western sandcherry-----	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yucca-----	-	-	-	-	-	-	-	-	-	-	-	-	1:	2:	-	-

See footnote at end of table.

TABLE U3.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP,  
IN PLANTING ZONE III--Continued

Woody species	Group 6R				Group 8				Group 9C			
	Precipitation:				Precipitation:				Precipitation:			
	10-:	15-:	Irri-:	gated:	10-:	15-:	Irri-:	gated:	10-:	15-:	Irri-:	gated:
	14":	19":	20+":		14":	19":	20+":		14":	19":	20+":	
Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers:												
Austrian pine-----	-	-	-	-	-	-	-	-	-	-	-	-
Blue spruce-----	-	-	16:	20	-	-	16:	21	-	-	-	-
Eastern redcedar-----	-	-	-	-	-	-	-	-	-	-	-	-
Lodgepole pine-----	-	16:	19:	25	-	-	-	-	-	-	-	-
Ponderosa pine-----	*12:	17:	19:	22	*11:	12:	16:	22	-	-	-	-
Rocky Mountain juniper--	9:	11:	13:	17	8:	10:	13:	18	*7:	8:	9:	18
Scotch pine-----	-	-	18:	21	-	-	-	-	-	-	-	-
Deciduous trees:												
Boxelder-----	-	-	-	20	-	-	-	-	-	-	-	-
Golden willow-----	-	-	-	-	-	-	-	25	-	-	28:	34
Green ash-----	11:	13:	15:	24	11:	13:	16:	29	13:	16:	19:	28
Honeylocust-----	-	-	-	-	-	-	-	-	-	-	-	-
Plains cottonwood-----	-	-	-	-	-	-	-	-	-	-	-	-
<del>Russian olive-----</del>	<del>11:</del>	<del>13:</del>	<del>15:</del>	<del>22</del>	<del>9:</del>	<del>11:</del>	<del>14:</del>	<del>21</del>	<del>14:</del>	<del>16:</del>	<del>19:</del>	<del>24</del>
Siberian crabapple-----	-	-	-	-	-	-	-	-	-	-	-	-
Siberian elm-----	*19:	22:	25:	31	*16:	19:	23:	33	*19:	22:	27:	33
Shrubs:												
American plum-----	-	-	6:	8	-	-	-	-	-	-	-	-
Antelope bitterbrush-----	2:	3:	-	-	-	-	-	-	-	-	-	-
Basin big sagebrush-----	3:	3:	-	-	3:	3:	-	-	-	-	-	-
Common chokecherry-----	-	-	-	-	-	-	-	-	-	-	-	-
Fourwing saltbush-----	-	-	-	-	2:	2:	-	-	2:	2:	-	-
Golden currant-----	-	3:	3:	4	-	-	-	-	-	-	-	-
Greasewood-----	-	-	-	-	-	-	-	-	2:	4:	-	-
Lilac-----	-	5:	6:	8	-	-	-	-	*5:	6:	7:	10
Nanking cherry-----	-	-	-	-	-	-	-	-	-	-	-	-
Peking cotoneaster-----	-	-	-	-	-	-	-	-	-	-	-	-
Redosier dogwood-----	-	-	6:	8	-	-	-	-	-	-	-	-
Rubber rabbitbrush-----	2:	3:	-	-	2:	3:	-	-	2:	2:	-	-
Rugosa rose-----	-	3:	3:	4	-	-	-	-	-	-	-	-
Saskatoon serviceberry--	-	-	4:	5	-	-	-	-	-	-	-	-
Siberian peashrub-----	5:	7:	8:	12	5:	6:	7:	12	-	-	-	-
Silver buffaloberry-----	-	*7:	8:	11	-	*5:	8:	12	-	7:	8:	11
Silver sagebrush-----	2:	3:	-	-	-	-	-	-	-	-	-	-
Skunkbush sumac-----	3:	4:	5:	8	3:	5:	7:	9	-	5:	6:	7
Tatarian honeysuckle-----	5:	7:	8:	11	5:	6:	8:	11	5:	6:	7:	11
Western sandcherry-----	-	-	-	-	-	-	-	-	-	-	-	-
Yucca-----	1:	2:	-	-	-	-	-	-	-	-	-	-

lemental water is needed during the 3- to 5-year establishm period.  
suitable for planting.