

CONSERVATION TREE AND SHRUB MANAGEMENT  
Riley County, Kansas

A Conservation Tree/Shrub Suitability Group (CTSG), formerly Windbreak Suitability Group, is a physiographic unit or area having similar climatic and edaphic characteristics that control the selection and height growth of trees and shrubs.

In this table, the Conservation Tree and Shrub Grouping is expressed as a group index number. The group index for Conservation Tree and Shrub groups (CTSG) are a guide for species best suited for different kinds of soil and for prediction height, growth, and effectiveness. The groupings can be used when selection woody plants for windbreaks, wildlife plantings riparian buffers, reforestation, other environmental plantings, recreation, landscaping, wetland restoration or enhancement and critical area plantings. CTSG's are developed to assure satisfactory species selection and adaptation to specific conditions of soil, climate and physiography. CTSG's are a guide for selection species best suited for different kinds of soil and prediction height growth and effectiveness.

All soil series mapped in the state have been placed in 10 groups of similar soil characteristics. Groups 1, 2, 3, 4, 6, and 9 are further divided into subgroups. In addition, all groups provide information by Major Land Resource Areas.

Each tree or shrub species has certain climatic and physiographic limits. Within these parameters a tree or shrub may be well or poorly suited because of soil characteristics. Each tree or shrub also has definable potentials of height growth depending on the factors just mentioned. Accurate definitions of potential heights are necessary for proper windbreak planning and design.

Windbreaks protect livestock, buildings, roads and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low-growing and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soil. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings and to abate noise. The plants, mostly evergreen shrubs and trees, are closely spaced. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Windbreaks are often planted on land that did not grow trees originally. Knowledge of how trees perform on such land can be gained only by observing and recording their performance where trees have been planted and survived. The problem is compounded by the fact that many favorite windbreak species are not indigenous to the areas in which they are planted.

The Kansas Field Office Technical Guide Notice KS-230, Conservation Tree and Shrub Plantings Suitability Groups shows the adapted species listing for each group index number. Showing the height that locally grown trees and shrubs are expected to reach in 20 years on various soils. The estimates are based on measurements and observation of established plantings that have been given adequate care. This information should be used to determine the placement of a windbreak, the area protected and the arrangement of species.

A number of attributes are included in the CTSG species tables for each group number found in this section of the Field Office Technical Guide. These attributes were rated subjectively and assigned a relative value to further assist those unfamiliar with individual species characteristics or desirability for the intended use. Definitions and explanations can be found. Additional information on planning windbreaks and screens and planting and caring for trees and shrubs can be obtained from the local office of the Natural Resources Conservation Service or of the Cooperative Extension Service or from a commercial nursery. See part 537 of the National Forestry Manual for additional information.

In the Tree and Shrub Management table interpretive ratings are given for various aspects of forest and conservation tree and shrub management. Some rating class terms indicate the degree to which the soils are suited to a specified forest management practice. Well suited indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. Moderately well suited indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable and fair performance can be expected. Some maintenance is needed. Poorly suited indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. Unsited indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

The paragraphs that follow indicate the soil properties considered in rating the soils for forest and conservation tree and shrub management practices. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet. Also, in the Kansas Field Office Technical Guide Notice KS-230, Conservation Tree and Shrub Plantings Suitability Groups.

Ratings in the columns suitability for hand planting and suitability for mechanical planting are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately well suited, poorly suited, or unsited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column suitability for mechanical site preparation (surface) are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsited to this management activity. The part of the soil from the surface to a depth of about 1-foot is considered in the ratings.

Ratings in the column suitability for mechanical site preparation (deep) are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsited to this management activity. The part of the soil from the surface to a depth of about 3 feet is considered in the ratings.

Ratings in the column potential for seedling mortality are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality. See the National Forestry Manual, Subpart B for criteria used in rating management concerns. Specific information on plants and yields can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

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(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. Pines and spruces are prone to disease problems. See text for further explanation of ratings in this table.)

Map symbol and soil name	Wind break Group	Suitability for hand planting	Suitability for mechanical planting	Suitability for mechanical site preparation (surface)	Suitability for mechanical site preparation (deep)	Potential for seedling mortality
		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
027CS: Crete-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
027CX: Crete-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
027HN: Hobbs-----	1	Well suited	Well suited	Well suited	Well suited	Low
027KS: Kipson-----	10	Well suited	Moderately suited Slope Rock fragments	Well suited	Well suited	High Lime Soil reaction
Sogn-----	10	Well suited	Moderately suited Slope	Well suited	Well suited	Low
061BE: Benfield-----	4C	Moderately suited Stickiness	Poorly suited Slope Stickiness Rock fragments	Poorly suited Slope	Poorly suited Slope	Low
Florence-----	6D	Poorly suited Stickiness Rock fragments	Poorly suited Rock fragments Stickiness Slope	Poorly suited Rock fragments Stickiness	Well suited	Low
061CF: Cline-----	8	Moderately suited Stickiness	Moderately suited Slope Stickiness Rock fragments	Poorly suited Stickiness	Well suited	Moderate Lime
Sogn-----	10	Unsuited Restrictive layer	Moderately suited Slope Restrictive layer	Poorly suited Restrictive layer	Well suited	Low
061CR: Crete-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
061CS: Crete-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
061EU: Eudora-----	1	Well suited	Well suited	Well suited	Well suited	Low
061HE: Haynie-----	1K	Well suited	Well suited	Well suited	Well suited	Moderate Lime
061KA: Kahola-----	1	Well suited	Well suited	Well suited	Well suited	Low
061KB: Kahola-----	1	Well suited	Well suited	Well suited	Well suited	Low
061RE: Reading-----	1	Well suited	Well suited	Well suited	Well suited	Low
061TO: Tully-----	3	Moderately suited Stickiness	Moderately suited Slope Stickiness	Well suited	Well suited	Low
117PA: Pawnee-----	4C	Well suited	Well suited	Well suited	Well suited	Low
117PB: Pawnee-----	4C	Well suited	Moderately suited Slope	Well suited	Well suited	Low
149HS: Haynie-----	1K	Well suited	Well suited	Well suited	Well suited	Moderate Lime
Sarpy-----	1K	Moderately suited Sandiness	Moderately suited Sandiness	Well suited	Well suited	Low
149PS: Paxico-----	10	Well suited	Well suited	Well suited	Well suited	High

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		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
149SF: Sarpy-----	1	Moderately suited Sandiness	Moderately suited Sandiness	Well suited	Well suited	Wetness High
197CM: Cline-----	8	Moderately suited Stickiness	Moderately suited Stickiness Slope	Poorly suited Stickiness	Well suited	Wetness Low
197FL: Florence-----	6D	Moderately suited Stickiness	Moderately suited Rock fragments Stickiness Slope	Well suited	Well suited	Low
Labette-----	4C	Moderately suited Stickiness	Moderately suited Stickiness Rock fragments	Well suited	Poorly suited Restrictive layer	Low
197IB: Irwin-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
197ID: Irwin-----	4C	Well suited	Moderately suited Slope	Well suited	Well suited	Low
197IV: Ivan-----	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction
197IX: Ivan-----	1K	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Moderate Soil reaction
197PN: Pawnee-----	4C	Well suited	Moderately suited Slope	Well suited	Well suited	High Wetness
197WE: Wamego-----	4	Moderately suited Stickiness	Moderately suited Stickiness Slope	Well suited	Well suited	Low
201CS: Crete-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
201CX: Crete, eroded-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
201KS: Kipson-----	10	Well suited	Poorly suited Slope Rock fragments	Poorly suited Slope	Poorly suited Slope	High Lime Soil reaction
Sogn-----	10	Well suited	Moderately suited Slope Rock fragments	Well suited	Unsuited Restrictive layer	Low
201LC: Lancaster-----	6D	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Ad: Ivan-----	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction
AED: Arents, Earthen Dam-		Not rated	Not rated	Not rated	Not rated	Not rated
BE: Benfield-----	4C	Moderately suited Stickiness	Moderately suited Stickiness Slope	Well suited	Well suited	Low

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		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
Bf: Benfield-----	4C	Moderately suited Stickiness	Rock fragments Moderately suited Slope Stickiness Rock fragments	Well suited	Well suited	Low
Florence-----	6D	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Restrictive layer	Low
Bk: Wymore-----	4C	Well suited	Rock fragments Slope Moderately suited Slope	Well suited	Well suited	Low
Kennebec-----	1	Well suited	Well suited	Well suited	Well suited	Low
BOP: Borrow Pits-----		Not rated	Not rated	Not rated	Not rated	Not rated
Ca: Carr-----	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction Low
Sarpy-----	1K	Well suited	Well suited	Well suited	Well suited	
Ch: Chase-----	1	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Cs: Clime-----	8	Moderately suited Stickiness	Moderately suited Slope Stickiness	Poorly suited Stickiness	Well suited	Low
Sogn-----	10	Unsuited Restrictive layer	Unsuited Restrictive layer Slope	Unsuited Restrictive layer	Unsuited Restrictive layer	Low
CT: Crete-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
Dr: Dwight-----	9C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Irwin-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Dw: Dwight-----	9C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Irwin-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Em: Elmont-----	3	Well suited	Moderately suited Slope	Well suited	Well suited	Low
En: Elmont-----	3	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Clime-----	8	Moderately suited Stickiness	Moderately suited Slope Stickiness	Well suited	Well suited	Low
Eu: Eudora-----	1	Well suited	Well suited	Well suited	Well suited	Low
Ga: Geary-----	3	Well suited	Well suited	Well suited	Well suited	Low
Ge: Geary-----	3	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Ha: Haynie-----	1K	Well suited	Well suited	Well suited	Well suited	Low
HO: Hobbs-----	1	Well suited	Well suited	Well suited	Well suited	Low
Ic: Irwin-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low

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		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
Id: Irwin, eroded-----	4C	Poorly suited Stickiness	Slope Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
Ie: Ivan-----	1K	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Moderate Soil reaction
Iv: Ivan-----	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction Low
Ka: Kennebec-----	1	Well suited	Well suited	Well suited	Well suited	Low
Ka: Kahola-----	1	Well suited	Well suited	Well suited	Well suited	Low
Ke: Kenesaw-----	3	Well suited	Well suited	Well suited	Well suited	Low
Kf: Kenesaw-----	3	Well suited	Moderately suited Slope	Well suited	Well suited	Low
KN: Kennebec-----	1	Well suited	Well suited	Well suited	Well suited	Low
M-W: Miscellaneous Water-		Not rated	Not rated	Not rated	Not rated	Not rated
Ma: Mayberry-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	High Wetness
Mb: Mayberry-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	High Wetness
Mu: Muir-----	1	Well suited	Well suited	Well suited	Well suited	Low
QUA: Quarries-----		Not rated	Not rated	Not rated	Not rated	Not rated
Rd: Reading-----	1	Well suited	Well suited	Well suited	Well suited	Low
Re: Reading-----	1	Well suited	Well suited	Well suited	Well suited	Low
Sa: Sarpy-----	1K	Well suited	Well suited	Well suited	Well suited	Low
Sm: Smolan-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Sn: Smolan-----	4C	Moderately suited Stickiness	Moderately suited Slope Stickiness	Well suited	Well suited	Low
So: Smolan, eroded-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
St: Clime-----	8	Moderately suited Stickiness	Unsuited Slope Stickiness Rock fragments	Poorly suited Slope Rock fragments Stickiness	Poorly suited Slope	Moderate Lime
Su: Sutphen-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Ts: Tully-----	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Tt: Tully, eroded-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Poorly suited Stickiness	Well suited	Low
Tu: Tully-----	3	Moderately suited Stickiness	Moderately suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low

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		Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features	Rating class and limiting features
Tv: Tully, eroded-----	4C	Moderately suited Stickiness	Moderately suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
W: Water-----		Not rated	Not rated	Not rated	Not rated	Not rated
Wm: Wymore-----	4C	Well suited	Well suited	Well suited	Well suited	Low
Wn: Wymore-----	4C	Well suited	Well suited	Well suited	Well suited	Low
Wo: Wymore, eroded-----	4C	Poorly suited Stickiness	Poorly suited Stickiness	Poorly suited Stickiness	Well suited	Low
Wr: Wymore-----	4C	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Ws: Wymore, eroded-----	4C	Poorly suited Stickiness	Poorly suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low

