

CONSERVATION TREE AND SHRUB MANAGEMENT
Harper 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. Unsuitable 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 unsuited 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 unsuited 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 unsuited 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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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
007AE: Albion-----	6G	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Shellabarger-----	5	Well suited	Moderately suited Slope	Well suited	Well suited	Low
007AS: Clairemont-----	1K	Well suited	Well suited	Well suited	Well suited	High Salinity Soil reaction
007FU: Farnum-----	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
007KA: Kanza-----	2	Well suited	Well suited	Well suited	Well suited	Low
095AD: Albion-----	6G	Well suited	Moderately suited Slope	Well suited	Well suited	Low
095DA: Dillwyn-----	1	Well suited	Well suited	Well suited	Well suited	Low
Plevna-----	2	Well suited	Well suited	Well suited	Unsuited Wetness	High Wetness
095LA: Lincoln-----	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction
095NB: Nashville-----	6D	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Quinlan-----	10	Well suited	Moderately suited Slope	Well suited	Well suited	Moderate Soil reaction
095SA: Shellabarger-----	5	Well suited	Well suited	Well suited	Well suited	Low
095SC: Shellabarger-----	5	Well suited	Moderately suited Slope	Well suited	Well suited	Low
095SD: Shellabarger-----	5	Well suited	Moderately suited Slope	Well suited	Well suited	Low
095ZA: Zenda-----	1	Well suited	Well suited	Well suited	Well suited	Low
191EA: Elandco-----	1	Well suited	Well suited	Well suited	Well suited	Low
191EC: Elandco-----	1	Well suited	Well suited	Well suited	Well suited	Low
191LS: Lincoln-----	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction
191OP: Wellsford-----		Moderately suited Stickiness	Moderately suited Stickiness Slope	Poorly suited Stickiness	Well suited	Low
Elandco-----	1	Well suited	Well suited	Well suited	Well suited	Low
191PD: Pond Creek-----	3	Well suited	Well suited	Well suited	Well suited	Low
191RA: Renfrow-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Grainola-----		Moderately suited Stickiness	Moderately suited Stickiness Rock fragments	Poorly suited Stickiness	Well suited	Low
191TA: Tabler-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
191US: Ustifluvents-----		Unsuited Horizon table contains no data	Unsuited Horizon table contains no data	Unsuited Horizon table contains no data	Unsuited Horizon table contains no data	High Horizon table contains no data

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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
1439: Crisfield-----	5	Well suited	Slope Well suited	Slope Well suited	Slope Well suited	Low
An: Kaski-----	1	Well suited	Well suited	Well suited	Well suited	Low
At: Attica-----	5	Well suited	Well suited	Well suited	Well suited	Low
Be: Bethany-----	4C	Well suited	Well suited	Well suited	Well suited	Low
Bh: Bethany-----	4C	Well suited	Well suited	Well suited	Well suited	Low
Bm: Lincoln-----	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction
Bo: Gerlane-----	1	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction
Bp: Woodward-----	8	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Port-----	1	Well suited	Well suited	Well suited	Well suited	Low
Br: Broken Alluvial Land		Well suited	Moderately suited Slope	Poorly suited	Poorly suited	Low
Ca: Carwile-----	1	Well suited	Well suited	Well suited	Well suited	High Wetness
Cc: Case-----	8	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction
Clark-----	8	Well suited	Well suited	Well suited	Well suited	Moderate Lime Soil reaction
Ce: Corbin-----	3	Well suited	Well suited	Well suited	Well suited	Low
Cf: Corbin-----	3	Well suited	Well suited	Well suited	Well suited	Low
Fa: Farnum-----	3	Moderately suited Stickiness	Moderately suited Slope Stickiness	Well suited	Well suited	Low
Fm: Farnum-----	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Fn: Farnum-----	3	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Fu: Farnum-----	3	Moderately suited Stickiness	Moderately suited Slope Stickiness	Well suited	Well suited	Low
Ge: Gerlane-----	1	Well suited	Well suited	Well suited	Well suited	Low
Gn: Grant-----	3	Well suited	Well suited	Well suited	Well suited	Low
Gr: Grant-----	3	Well suited	Well suited	Well suited	Well suited	Low
GRP: Gravel Pits-----		Not rated	Not rated	Not rated	Not rated	Not rated
Gs: Grant-----	3	Well suited	Moderately suited Slope	Well suited	Well suited	Low
INT: Aquolls-----		Moderately suited Rock fragments	Poorly suited Rock fragments	Poorly suited Rock fragments	Well suited	High Wetness Soil reaction
Ka: Kanza-----	2	Well suited	Well suited	Well suited	Well suited	Low
Kk: Kaski-----	1	Well suited	Well suited	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
Km: Kirkland-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Kr: Kirkland-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Renfrow-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Kw: Kirkland-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Renfrow-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Mc: Minco-----	3	Well suited	Well suited	Well suited	Well suited	Low
Mn: Minco-----	3	Well suited	Well suited	Well suited	Well suited	Low
Mo: Minco-----	3	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Na: Nashville-----	6D	Well suited	Well suited	Well suited	Well suited	Low
Ne: Nashville-----	6D	Well suited	Well suited	Well suited	Well suited	Low
Nh: Nashville-----	6D	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Nn: Nashville-----	6D	Well suited	Moderately suited Slope	Well suited	Well suited	Low
No: Norge-----	3	Well suited	Well suited	Well suited	Well suited	Low
Pc: Pond Creek-----	3	Well suited	Well suited	Well suited	Well suited	Low
Pd: Pond Creek-----	3	Well suited	Well suited	Well suited	Well suited	Low
Pe: Pond Creek-----	3	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Pg: Pond Creek-----	3	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Ph: Dale-----	1	Well suited	Well suited	Well suited	Well suited	Low
Pk: Port-----	9L	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction Salinity
Pm: Pratt-----	7	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Pn: Pratt-----	7	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Po: Pratt-----	7	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Carwile-----	1	Well suited	Well suited	Well suited	Well suited	High Wetness
Pt: Pratt-----	7	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Tivoli-----	7	Moderately suited Sandiness	Moderately suited Slope Sandiness	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
Qa: Quinlan-----	10	Moderately suited Rock fragments Restrictive layer	Poorly suited Rock fragments	Poorly suited Rock fragments	Well suited	Moderate Soil reaction
Qn: Quinlan-----	10	Moderately suited Rock fragments Restrictive layer	Poorly suited Rock fragments	Poorly suited Rock fragments	Well suited	Moderate Soil reaction
Qu: Quinlan-----	10	Moderately suited Rock fragments Restrictive layer	Poorly suited Rock fragments Slope	Poorly suited Rock fragments	Well suited	Moderate Soil reaction
Rc: Renfrow-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Vernon-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Poorly suited Stickiness	Well suited	Moderate Soil reaction
Re: Ruella-----	8	Moderately suited Restrictive layer	Well suited	Well suited	Well suited	Moderate Soil reaction
Rh: Ruella-----	8	Moderately suited Restrictive layer	Well suited	Well suited	Well suited	Moderate Soil reaction
Ru: Ruella-----	8	Moderately suited Restrictive layer	Moderately suited Slope	Well suited	Well suited	Moderate Soil reaction
Sa: Lesho-----	1K	Well suited	Well suited	Well suited	Well suited	Moderate Soil reaction Salinity
Sb: Shellabarger-----	5	Well suited	Well suited	Well suited	Well suited	Low
Se: Shellabarger-----	5	Well suited	Well suited	Well suited	Well suited	Low
Sf: Shellabarger-----	5	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Sg: Shellabarger-----	5	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Sh: Zellmont-----	6	Well suited	Well suited	Well suited	Well suited	Low
SHH: Shellabarger-----	5	Well suited	Well suited	Well suited	Well suited	Low
Sk: Zellmont-----	6	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Sm: Zellmont, eroded----	6	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Sn: Shellabarger-----	5	Well suited	Well suited	Well suited	Well suited	Low
So: Shellabarger-----	5	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Albion-----	6G	Well suited	Moderately suited 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
Sp: Drummond-----	9W	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	High Salinity Soil reaction
Ta: Tabler-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Well suited	Well suited	Low
Th: Tivoli-----	7	Moderately suited Sandiness	Moderately suited Slope Sandiness	Well suited	Well suited	Low
Vr: Vernon-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Poorly suited	Well suited	Moderate
Renfrow-----	4C	Moderately suited Stickiness	Moderately suited Stickiness	Stickiness Well suited	Well suited	Soil reaction Low
W: Water-----		Not rated	Not rated	Not rated	Not rated	Not rated
Wa: Kingman-----	2	Well suited	Well suited	Well suited	Well suited	High Wetness Soil reaction
Wd: Quinlan-----	10	Moderately suited Rock fragments Restrictive layer	Poorly suited Rock fragments	Poorly suited Rock fragments	Well suited	Moderate Soil reaction
Woodward-----	8	Well suited	Well suited	Well suited	Well suited	Low
We: Quinlan-----	10	Moderately suited Rock fragments Restrictive layer	Poorly suited Rock fragments	Poorly suited Rock fragments	Well suited	Moderate Soil reaction
Woodward-----	8	Well suited	Well suited	Well suited	Well suited	Low
Ww: Quinlan-----	10	Moderately suited Rock fragments Restrictive layer	Poorly suited Rock fragments Slope	Poorly suited Rock fragments	Well suited	Moderate Soil reaction
Woodward-----	8	Well suited	Moderately suited Slope	Well suited	Well suited	Low
Za: Canadian-----	1	Well suited	Well suited	Well suited	Well suited	Low
Zf: Zenda-----	1	Well suited	Well suited	Well suited	Well suited	Low

