

Tree and Shrub Species for Windbreaks

INTRODUCTION

This technical note is intended to be used as a guide for selecting tree and shrub species when planning critical density windbreaks. Refer to specific standards in Section IV of the Wisconsin Field Office Technical Guide (FOTG) for practice purposes and requirements.

BACKGROUND

The table in this technical note includes most, but not all of the native tree and shrub species suitable for windbreaks and shelterbelts in Wisconsin. Other native species may be planted if they serve the intended purpose of the planting. For guidance on tree and shrub species not identified here, or to

develop specific recommendations for a particular site, see Wisconsin Forestry Technical Note 1, Native Tree and Shrub Planting Recommendations for Wisconsin (species in Technical Note 1 are arranged by MLRA and drainage classification), or contact the local Wisconsin Department of Natural Resources Forester or the NRCS State Forester.

APPLICATION AND PROCEDURE

The following table should be used to develop tree and shrub recommendations for windbreaks. Refer to Wisconsin Forestry Technical Note 1, Native Tree and Shrub Planting Recommendations for Wisconsin, for guidance in choosing the appropriate species for a particular site and FOTG Standard 612 for establishing trees and shrubs for windbreaks.

Table 1
Tree and Shrub Species

Species	Branch Retention	Porosity Summer/Winter	Spacing in Row	Height @20
Trees				
Jack Pine	Poor	Moderate	6-10 feet	30 feet
Bur Oak	Fair	Dense/Porous	7-12 feet	25 feet
Shagbark Hickory*	Fair	Moderate/Porous	8-12 feet	15 feet
Sugar Maple	Good	Dense/Porous	8-12 feet	20 feet
Red Pine	Poor	Moderate	6-10 feet	30 feet
Imperial Carolina Hybrid Poplar* ¹	Fair	Dense/Porous	7-12 feet	70 feet
Quaking Aspen*	Poor	Dense/Porous	6-12 feet	40 feet
Northern Red Oak	Fair	Dense/Porous	7-12 feet	35 feet
White Oak	Fair	Dense/Porous	7-12 feet	25 feet
Eastern White Pine	Poor	Dense	6-10 feet	40 feet
Norway Spruce	Good	Dense	8-12 feet	35 feet
White Spruce	Good	Dense	8-12 feet	30 feet
Hackberry*	Fair	Moderate/Porous	12-16 feet	25 feet
Eastern Red Cedar	Good	Dense	6-12 feet	25 feet
Northern White Cedar	Good	Dense	6-12 feet	25 feet
Affinity White Cedar* ¹	Good	Dense	6-12 feet	25 feet

Species	Branch Retention	Porosity Summer/Winter	Spacing in Row	Height @20
Shrubs				
American Hazelnut	Fair	Moderate/Porous	5-8 feet	10 feet
Laurel Willow*	Fair	Moderate/Porous	12-17 feet	30 feet
Hawthorn	Poor	Dense/Porous	6-8 feet	20 feet
American Highbush Cranberry	Poor	Moderate/Porous	6-8 feet	6 feet
Red Osier Dogwood	Fair	Dense/Moderate	4-6 feet	5 feet
Silky Dogwood	Fair	Dense/Moderate	3-6 feet	7 feet
Common Ninebark	Fair	Dense/Moderate	6-8 feet	10 feet
Wild Plum	Poor	Dense/Moderate	6-8 feet	24 feet
Elderberry*	Poor	Dense/Porous	5-8 feet	7 feet
Staghorn Sumac*	Fair	Moderate/Porous	6-12 feet	10 feet
Smooth Sumac*	Poor	Dense/Porous	6-12 feet	12 feet
Magenta Crabapple* ¹	Poor	Dense/Porous	6-12 feet	30 feet
Nanking Cherry*	Poor	Dense/Moderate	6-8 feet	8 feet
Peking Cotoneaster*	Fair	Dense/Moderate	5-8 feet	6 feet
Roselow Sargent Crabapple* ¹	Poor	Moderate/Porous	5-12 feet	10 feet
Serviceberry*	Good	Dense/Porous	5-8 feet	25 feet
Silverberry*	Poor	Dense/Moderate	5-6 feet	12 feet
Indigo Silky Dogwood* ¹	Fair	Dense/Moderate	3-6 feet	7 feet

*Species not currently available from WDNR State Nursery.

¹Species developed specifically for windbreaks by USDA.

PLANNING CONSIDERATIONS

Trees with poor branch retention should not be used as single row windbreaks, snow fences, or shelterbelts.

Hardwood trees that exhibit dense porosity will provide a single row windbreak with 35-40% density, those with moderate porosity will provide 25-35% windbreak density, and those rated as porous will provide 25% or less windbreak density.

Conifers that exhibit dense porosity will provide a single row windbreak with up to 60% density, and tree species rated as moderate porosity will provide 40% windbreak density.

Multiple row windbreaks with mixed species of hardwoods, conifers, and shrubs will provide a windbreak with 60-80% density.

Figure 1

