



North Dakota Tree Handbook

Table of Contents

Section I – Introduction

[Species List by Common Name](#)

[Species List by Scientific Name](#)

[Woody Plant Nomenclature](#)

[Trees and Shrubs – Make Life Easier on the Prairies](#)

[How to Use the North Dakota Tree Handbook](#)

Section II – Plant Species Characteristics and Applications

[Quick Reference Legend](#)

Tree Growth Beneath the Ground

Tree Growth Above the Ground

Tree Form

[USDA Plant Hardiness Zones](#)

Hardiness Zone Map of North Dakota

Windbreak Suitability Groups – Species List by Windbreak Suitability Groups

Section III – Plant Pictures and Descriptions

[Shrubs](#)

[Small Trees](#)

[Medium and Tall Trees](#)

[Conifers](#)

Section IV – Tree Care and Maintenance

Weed Control in Tree Plantings

[Woody Plant Pests](#)

[List of Annotated References on Tree Pests](#)

[Diagnosing Tree Problems Using Injury Symptoms](#)

[Insects](#)

[Diseases](#)

[Abiotic Factors](#)

[Common and Scientific Names of Woody Plant Pests](#)

Section V – Appendix

[Glossary](#)

[Reference Materials](#)

How Windbreaks Work

[Windbreak Establishment](#)

[Windbreaks and Wildlife](#)

[Windbreaks in Sustainable Agricultural Systems](#)

[Windbreaks for Rural Living](#)

[Windbreaks for Livestock Operations](#)

Species List by Common Name

Common Name

Genus/Species

SHRUBS

| | |
|--|------------------------------------|
| Almond, Russian | <i>Prunus tenella</i> |
| Buffaloberry, Silver | <i>Shepherdia argentea</i> |
| Caragana (Siberian Peashrub) | <i>Caragana arborescens</i> |
| Cherry, Mongolian | <i>Prunus fruticosa</i> |
| Cherry, Nanking | <i>Prunus tomentosa</i> |
| Chokecherry | <i>Prunus virginiana</i> |
| Cotoneaster, European | <i>Cotoneaster integerrimus</i> |
| Cranberrybush, American | <i>Viburnum trilobum</i> |
| Currant, Golden (Clove) | <i>Ribes odoratum</i> |
| Dogwood, Redosier | <i>Cornus sericea</i> |
| Euonymus, Winterberry | <i>Euonymus bungeana</i> |
| Forsythia, Meadowlark | <i>Forsythia</i> x `Meadowlark' |
| Honeysuckle, Amur | <i>Lonicera maackii</i> |
| Honeysuckle, Freedom | <i>Lonicera</i> x `Freedom' |
| Indigo, False | <i>Amorpha fruticosa</i> |
| Juneberry (Saskatoon Serviceberry) | <i>Amelanchier alnifolia</i> |
| Lilac, Common | <i>Syringa vulgaris</i> |
| Lilac, Late | <i>Syringa villosa</i> |
| Plum, American | <i>Prunus americana</i> |
| Potentilla (Shrubby Cinquefoil) | <i>Potentilla fruticosa</i> |
| Rose, Hansen Hedge | <i>Rosa</i> species |
| Sandcherry, Western | <i>Prunus besseyi</i> |
| Sea-buckthorn | <i>Hippophae rhamnoides</i> |
| Silverberry | <i>Elaeagnus commutata</i> |
| Spirea, Vanhoutte | <i>Spiraea</i> x <i>vanhouttei</i> |
| Sumac, Fragrant | <i>Rhus aromatica</i> |
| Sumac, Skunkbush (Lemonade) | <i>Rhus trilobata</i> |
| Sumac, Smooth | <i>Rhus glabra</i> |
| Sumac, Staghorn | <i>Rhus typhina</i> |
| Viburnum, Arrowwood | <i>Viburnum dentatum</i> |
| Viburnum, Nannyberry | <i>Viburnum lentago</i> |
| Willow, Sandbar | <i>Salix interior</i> |

SMALL TREES

| | |
|--|---|
| Apple, Common | <i>Malus pumila</i> |
| Apricot, Manchurian | <i>Prunus armeniaca</i> var. <i>mandshurica</i> |
| Chokecherry, Amur | <i>Prunus maackii</i> |
| Crabapple, Flowering | <i>Malus</i> hybrids |
| Crabapple, Siberian | <i>Malus baccata</i> |
| Hawthorn, Arnold | <i>Crataegus arnoldiana</i> |
| Ironwood (American Hop-hornbeam) | <i>Ostrya virginiana</i> |
| Lilac, Japanese Tree | <i>Syringa reticulata</i> |
| Maple, Amur | <i>Acer ginnala</i> |
| Maple, Tatarian | <i>Acer tataricum</i> |
| Mountain-ash, European | <i>Sorbus aucuparia</i> |

[Pear, Ussurian \(Harbin\)](#)[Russian-olive](#)**MEDIUM AND TALL TREES**[Ash, Black](#)[Ash, Green](#)[Ash, Manchurian](#)[Aspen, Quaking](#)[Birch, Paper](#)[Boxelder](#)[Buckeye, Ohio](#)[Cottonwood](#)[Elm, American](#)[Elm, Japanese](#)[Elm, Siberian](#)[Hackberry, Common](#)[Honeylocust, Common](#)[Linden, American \(Basswood\)](#)[Linden, Littleleaf](#)[Maple, Silver](#)[Oak, Bur](#)[Oak, Mongolian](#)[Poplar, Hybrid](#)[Poplar, White](#)[Walnut, Black](#)[Willow, Golden](#)[Willow, Laurel](#)[Willow, Redstem](#)[Willow, White](#)**CONIFERS**[Arborvitae, American](#)[Arborvitae, Siberian](#)[Douglas-Fir, Rocky Mountain](#)[Fir, White \(Concolor\)](#)[Juniper, Rocky Mountain](#)[Larch, Siberian](#)[Pine, Jack](#)[Pine, Limber](#)[Pine, Lodgepole](#)[Pine, Mugo](#)[Pine, Ponderosa](#)[Pine, Scotch](#)[Red-cedar, Eastern](#)[Spruce, Black Hills](#)[Spruce, Colorado \(Blue\)](#)*Pyrus ussuriensis**Elaeagnus angustifolia**Fraxinus nigra**Fraxinus pennsylvanica**Fraxinus mandshurica**Populus tremuloides**Betula papyrifera**Acer negundo**Aesculus glabra**Populus deltoides**Ulmus americana**Ulmus davidiana* var. *japonica**Ulmus pumila**Celtis occidentalis**Gleditsia triacanthos**Tilia americana**Tilia cordata**Acer saccharinum**Quercus macrocarpa**Quercus mongolica**Populus* hybrids*Populus alba**Juglans nigra**Salix alba* `Vitellina'*Salix pentandra**Salix alba* `Chermesina'*Salix alba**Thuja occidentalis**Thuja occidentalis* `Wareana'*Pseudotsuga menziesii* var. *glauca**Abies concolor**Juniperus scopulorum**Larix sibirica**Pinus banksiana**Pinus flexilis**Pinus contorta* var. *latifolia**Pinus mugo**Pinus ponderosa**Pinus sylvestris**Juniperus virginiana**Picea glauca* var. *densata**Picea pungens***Species List by Scientific Name****Genus/Species***Abies concolor***Common Name**[Fir, White \(Concolor\)](#)**Family**

Pinaceae

| | | |
|---|--|------------------|
| <i>Acer ginnala</i> | Maple, Amur | Aceraceae |
| <i>Acer negundo</i> | Boxelder | Aceraceae |
| <i>Acer saccharinum</i> | Maple, Silver | Aceraceae |
| <i>Acer tataricum</i> | Maple, Tatarian | Aceraceae |
| <i>Aesculus glabra</i> | Buckeye, Ohio | Hippocastanaceae |
| <i>Amelanchier alnifolia</i> | Juneberry (Saskatoon Serviceberry) | Rosaceae |
| <i>Amorpha fruticosa</i> | Indigo, False | Fabaceae |
| <i>Betula papyrifera</i> | Birch, Paper | Betulaceae |
| <i>Caragana arborescens</i> | Caragana (Siberian Peashrub) | Fabaceae |
| <i>Celtis occidentalis</i> | Hackberry, Common | Ulmaceae |
| <i>Cornus sericea</i> | Dogwood, Redosier | Cornaceae |
| <i>Cotoneaster integerrimus</i> | Cotoneaster, European | Rosaceae |
| <i>Crataegus arnoldiana</i> | Hawthorn, Arnold | Rosaceae |
| <i>Elaeagnus angustifolia</i> | Russian-olive | Elaeagnaceae |
| <i>Elaeagnus commutata</i> | Silverberry | Elaeagnaceae |
| <i>Euonymus bungeana</i> | Euonymus, Winterberry | Celastraceae |
| <i>Forsythia</i> x <i>F.</i> 'Meadowlark' | Forsythia, Meadowlark | Oleaceae |
| <i>Fraxinus mandshurica</i> | Ash, Manchurian | Oleaceae |
| <i>Fraxinus nigra</i> | Ash, Black | Oleaceae |
| <i>Fraxinus pennsylvanica</i> | Ash, Green | Oleaceae |
| <i>Gleditsia triacanthos</i> | Honeylocust, Common | Fabaceae |
| <i>Hippophae rhamnoides</i> | Sea-buckthorn | Elaeagnaceae |
| <i>Juglans nigra</i> | Walnut, Black | Juglandaceae |
| <i>Juniperus scopulorum</i> | Juniper, Rocky Mountain | Cupressaceae |
| <i>Juniperus virginiana</i> | Red-cedar, Eastern | Cupressaceae |
| <i>Larix sibirica</i> | Larch, Siberian | Pinaceae |
| <i>Lonicera</i> x 'Freedom' | Honeysuckle, Freedom | Caprifoliaceae |
| <i>Lonicera maackii</i> | Honeysuckle, Amur | Caprifoliaceae |
| <i>Malus pumila</i> | Apple, Common | Rosaceae |
| <i>Malus baccata</i> | Crabapple, Siberian | Rosaceae |
| <i>Malus</i> hybrids | Crabapple, Flowering | Rosaceae |
| <i>Ostrya virginiana</i> | Ironwood (American Hop-hornbeam) | Betulaceae |
| <i>Picea glauca</i> var. <i>densata</i> | Spruce, Black Hills | Pinaceae |
| <i>Picea pungens</i> | Spruce, Colorado (Blue) | Pinaceae |
| <i>Pinus banksiana</i> | Pine, Jack | Pinaceae |
| <i>Pinus contorta</i> var. <i>latifolia</i> | Pine, Lodgepole | Pinaceae |
| <i>Pinus flexilis</i> | Pine, Limber | Pinaceae |
| <i>Pinus mugo</i> | Pine, Mugo | Pinaceae |
| <i>Pinus ponderosa</i> | Pine, Ponderosa | Pinaceae |
| <i>Pinus sylvestris</i> | Pine, Scotch | Pinaceae |
| <i>Populus alba</i> | Poplar, White | Salicaceae |
| <i>Populus deltoides</i> | Cottonwood | Salicaceae |
| <i>Populus</i> hybrids | Poplar, Hybrid | Salicaceae |
| <i>Populus tremuloides</i> | Aspen, Quaking | Salicaceae |
| <i>Potentilla fruticosa</i> | Potentilla (Shrubby Cinquefoil) | Rosaceae |
| <i>Prunus americana</i> | Plum, American | Rosaceae |
| <i>Prunus armeniaca</i> var. <i>mandshurica</i> | Apricot, Manchurian | Rosaceae |
| <i>Prunus fruticosa</i> | Cherry, Mongolian | Rosaceae |
| <i>Prunus maackii</i> | Chokecherry, Amur | Rosaceae |
| <i>Prunus besseyi</i> | Sandcherry, Western | Rosaceae |
| <i>Prunus tenella</i> | Almond, Russian | Rosaceae |

| | | |
|--|---|-----------------|
| <i>Prunus tomentosa</i> | Cherry, Nanking | Rosaceae |
| <i>Prunus virginiana</i> | Chokecherry | Rosaceae |
| <i>Pseudotsuga menziesii</i> var. <i>glauca</i> | Douglas-Fir, Rocky Mountain | Pinaceae |
| <i>Pyrus ussuriensis</i> | Pear, Ussurian (Harbin) | Rosaceae |
| <i>Quercus macrocarpa</i> | Oak, Bur | Fagaceae |
| <i>Quercus mongolica</i> | Oak, Mongolian | Fagaceae |
| <i>Rhus aromatica</i> | Sumac, Fragrant | Anacardiaceae |
| <i>Rhus glabra</i> | Sumac, Smooth | Anacardiaceae |
| <i>Rhus trilobata</i> | Sumac, Skunkbush (Lemonade) | Anacardiaceae |
| <i>Rhus typhina</i> | Sumac, Staghorn | Anacardiaceae |
| <i>Ribes odoratum</i> | Currant, Golden (Clove) | Grossulariaceae |
| <i>Rosa</i> species | Rose, Hansen Hedge | Rosaceae |
| <i>Salix alba</i> | Willow, White | Salicaceae |
| <i>Salix alba</i> `Chermesina' | Willow, Redstem | Salicaceae |
| <i>Salix alba</i> `Vitellina' | Willow, Golden | Salicaceae |
| <i>Salix interior</i> | Willow, Sandbar | Salicaceae |
| <i>Salix pentandra</i> | Willow, Laurel | Salicaceae |
| <i>Shepherdia argentea</i> | Buffaloberry, Silver | Elaeagnaceae |
| <i>Sorbus aucuparia</i> | Mountain-ash, European | Rosaceae |
| <i>Spiraea x vanhouttei</i> | Spirea, Vanhoutte | Rosaceae |
| <i>Syringa reticulata</i> | Lilac, Japanese Tree | Oleaceae |
| <i>Syringa villosa</i> | Lilac, Late | Oleaceae |
| <i>Syringa vulgaris</i> | Lilac, Common | Oleaceae |
| <i>Thuja occidentalis</i> | Arborvitae, American | Cupressaceae |
| <i>Thuja occidentalis</i> `Wareana' | Arborvitae, Siberian | Cupressaceae |
| <i>Tilia americana</i> | Linden, American (Basswood) | Tiliaceae |
| <i>Tilia cordata</i> | Linden, Littleleaf | Tiliaceae |
| <i>Ulmus americana</i> | Elm, American | Ulmaceae |
| <i>Ulmus davidiana</i> var. <i>japonica</i> | Elm, Japanese | Ulmaceae |
| <i>Ulmus pumila</i> | Elm, Siberian | Ulmaceae |
| <i>Viburnum dentatum</i> | Viburnum, Arrowwood | Caprifoliaceae |
| <i>Viburnum lentago</i> | Viburnum, Nannyberry | Caprifoliaceae |
| <i>Viburnum trilobum</i> | Cranberrybush, American | Caprifoliaceae |

How To Use the North Dakota Tree Handbook

The North Dakota Tree Handbook has been designed to assist specialists and lay people with forestry responsibilities in developing conservation and community tree plantings. This handbook will be useful to soil conservationists, foresters, arborists, landscape architects, nursery personnel, soil conservation district personnel, and county extension personnel.

The handbook contains four main sections:

- Section I - Introduction
- Section II - Plant Species Characteristics and Applications
- Section III - Plant Pictures and Descriptions
- Section IV - Tree Care and Maintenance
- Section V - Glossary and Appendix

The location of the black bar along the edge of the photo pages indicates the suitability of each species for planting close to or under powerlines.

Top of page = Usually suitable for planting under powerlines.
Center of page = May be suitable for planting near powerlines, if
local authorities approve.
Bottom of page = Not suitable for planting near powerlines.

In some sections of this handbook references are made to species of trees or shrubs not identified and described in Section III – Plant Pictures and Descriptions. These additional species are included for purposes of comparison or general information.

Section I–Introduction

This section contains the tools and guidelines to enable the reader to make full use of this handbook.

The Table of Contents lists the major subject matter of the book.

The Species List by Common Name is an alphabetical listing of woody plant species within each of the four size categories: shrubs, small trees, medium-tall trees, and conifers. Species List by Scientific Name lists all 85 plants in alphabetical order by genus and species.

Woody Plant Nomenclature explains the rationale and advantages to scientific naming.

How to Use the North Dakota Tree Handbook explains how each section is arranged and the type of information available within.

Section II – Plant Characteristics and Applications

The species described in this handbook are native and introduced trees and shrubs of North Dakota that are hardy under the conditions given in the descriptions. Though not often used for lumber, these plants are valuable in North Dakota for: soil conservation, energy conservation, crop protection, water conservation, water quality improvement, landscaping, wildlife, aesthetics, and noise and snow control.

Quick Reference. Shows at a glance how each plant relates to each of the 26 characteristics listed. If the column headings do not fully explain the characteristic, refer to the Quick Reference Legend for more detail. The small numbers in parenthesis () in the column headings refer to the numbers in the legend that define that characteristic.

General Tree Growth Characteristics. Describes the physiology of tree growth. Understanding how a tree grows and responds to its environment will often assist people in selecting the most appropriate tree or shrub for a given use.

USDA Plant Hardiness Zone Map. Shows the average annual minimum temperatures that can be expected each year in south central Canada and the north central United States. Woody plants are categorized based on the coldest temperature (hardiness zone) in which the plants normally survive.

Hardiness Zone Map of North Dakota. Assists in the selection of species suitable to various parts of the state. Zone A is considered the most favorable and receives the highest annual precipitation. More favorable, sheltered sites may allow a particular woody plant to be grown in zones beyond those recommended. This map is to be used with the Quick Reference.

Windbreak Suitability Groups. Explain in general how soil characteristics affect woody plant survival and

growth.

The species list by windbreak suitability group includes 85 woody plant species and their appropriate windbreak suitability groups (soils) in which they can be expected to survive and perform adequately. Trees that might do well in an urban setting may fail when exposed to the conditions found in a conservation planting. Likewise, trees not expected to do well in rural sites may do quite well in an urban setting. This fact underscores the need to consult with a local specialist knowledgeable of soils, climate and other conditions in a particular locale.

Section III – Plant Pictures and Descriptions

Eighty-five species are grouped into four categories to facilitate easier tree plan development. The categories are:

Deciduous Shrubs
Small Deciduous Trees
Medium and Tall Deciduous Trees
Conifers

The species are listed by common name in alphabetical sequence. Each species is illustrated using four photographs. The pictures show the most outstanding characteristics of each plant. The back of the photo sheet includes information on each tree in the following categories:

1. **General Description** – Includes a description of the leaves, buds, flowers, fruit, and form as well as any outstanding characteristics unique to a given plant.
2. **Environmental Requirements** – Includes soil adaptation, cold hardiness, and water and light requirements.
3. **Uses** – Includes the value of a given plant for a variety of uses such as conservation/windbreaks, wildlife, agroforestry products, and urban/recreational plantings. Note: The authors assume no liability for the effectiveness or safety of the woody plant medical uses listed. For specific details on the medicinal properties and uses of these products, refer to the references listed in the beginning of this handbook.
4. **Cultivated Varieties and Related Species** – Includes recommended and currently available varieties as well as related tree or shrub species to assist in making alternative plant selections.
5. **Pests** – Includes the most commonly occurring pest problems.

Section IV – Tree Care and Maintenance

Weed Control¹. Includes pictures of four commonly used weed control practices. The captions under each picture give the key components of each method. Further details concerning tillage, mulches and cover crops, as well as the types of chemicals, effectiveness and label restrictions, are discussed. Forestry agencies, state universities, county extension offices, and conservation district offices also have information and materials available on tree care and maintenance.

¹ Vern Quam and Rich Zollinger co-authored this section on weed control. Picture credits, USDA-Natural Resource Service.

Woody Plant Pests². Provides diagnostic information on tree diseases and insects. In easy to understand terms, the common pests affecting trees in North Dakota, are described by their mode of activity, the likelihood of continued problems and methods to identify and diagnose the cause of the injury. Major categories are: **Insects**, **Diseases**, and **Abiotic Factors**.

² Arden Tagestad, North Dakota Forest Service, authored this report in 1994.

Diagnosing Tree Problems Using Injury Symptoms (a section of Woody Plant Pests). Is an easy to use diagnostic tool

for people to determine likely causes of tree injury in most field situations. A strength of this key is the reference to specific pages in professional texts that give more details about each pest, including methods of prevention or control.

Section V – Appendix

Glossary

The **Glossary** provides definitions of tree botanical characteristics as well as other terminology associated with proper tree planting and care in the Great Plains.

Reference Materials

Includes published pamphlets that provide additional information on tree care, windbreaks, and weed control. Funding and authorship of these pamphlets was provided by the University of Nebraska, North Dakota State University and National Resources Conservation Service. The pamphlets were published by the University of Nebraska and address the following issues relating to proper windbreak management:

- "How Windbreaks Work"
- "Windbreak Establishment"
- "Windbreaks and Wildlife"
- "Windbreaks in Sustainable Agricultural Systems"
- "Windbreaks for Rural Living"
- "Windbreaks for Livestock Operations"

[North Dakota Tree Handbook](#) • [North Dakota Tree Information Center](#)

[NDSU Home Page](#) • [NDSU Agriculture](#) • [NDSU Dept. of Plant Sciences](#) • [ND Forest Service](#)

[INFORMATION](#) [ACADEMICS](#) [RESEARCH](#) [EXTENSION](#) [PUBLICATIONS](#) [CALENDAR](#) [WEATHER](#) [DIRECTORY](#)

[Information for Prospective Students](#)

NDSU is an EO/AA university

Feel free to use and share this content, but please do so under the [conditions](#) of our [Creative Commons](#) license. Thanks.

