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Joe Zeleznik, NDSU Extension Forester

Greg Morgenson, Research Specialist, NDSU Plant Sciences Department

Todd West, Professor, NDSU Plant Sciences Department

Pines for North Dakota

This publication provides an overview of the most common species and cultivars of pine trees (*genus Pinus*) that generally do well in North Dakota in shelterbelts or as ornamentals. Pines are highly valuable on the prairie, providing wind protection, even in winter when deciduous trees have dropped their leaves.

While all pines are evergreens, not all evergreens are pines. Pines are unique among evergreens in that their needles are longer (1.5 to 9 inches) than other genera such as spruce or fir. Also, pines have multiple needles that are held together in bundles called fascicles.

The main characteristics used to identify one pine from another are the number of needles per fascicle (two, three or five), the length of those needles, and the size and shape of the cones. Bark is not commonly used in differentiating pine species.

Some species are more drought-tolerant than others, but all pines tend to do poorly on wet sites. Two native pine species are found in western North Dakota: ponderosa pine and limber pine. While ponderosa does well throughout the state, limber pine generally does not. The only pines approved for conservation plantings (for example, windbreaks) are ponderosa pine and Scotch pine (as of printing date).



Ponderosa Pine (*Pinus ponderosa*)

Key identifiers:

- Needles: two or (more often) three/fascicle, 4 to 9 inches long
- Cones: 3 to 5 inches long, reddish brown, **with a sharp prickle at the end of the scale**
- Cinnamon-rusty red bark in scaly plates

Ponderosa pine is a large tree native to southwestern North Dakota that is pyramidal when young. It becomes irregularly oblong and open-crowned with age. It is fairly drought-tolerant and does well on a variety of soils in shelterbelts and urban areas.

Ponderosa pine is somewhat tolerant of soil salinity. While it does have several insect and disease problems, ponderosa pine can be extremely long-lived.



Limber Pine (*Pinus flexilis*)

Key identifiers:

- Needles: five/fascicle, 2.5 to 3.5 inches long
- Cones: 3 to 6 inches long, **light brown-tan**
- Very flexible twigs

Limber pine is a small to medium pine with an uneven crown. It's often multi-stemmed. This tree is less susceptible to salt and winterburn injury than other five-needle pines. It's often confused with Eastern white pine, but limber pine's twigs are stouter than Eastern white pine twigs, and the needles are not serrated like Eastern white pine needles.

Limber pine is native to a very limited area in southwestern North Dakota from seed carried to this site by early Native Americans. It generally does poorly in other parts of the state.



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Pine Wilt Disease

Pine wilt disease, a fatal disease of Scotch, Austrian and mugo pines, has been identified in eastern South Dakota to just north of the Watertown, S.D., vicinity. This disease is spread by the interaction of the pine wilt nematode (*Bursaphelenchus xylophilus*) with pine sawyer beetles (*Monochamus* sp.) and has moved north from Missouri, Kansas and Nebraska. As of printing date, pine wilt disease has not been found in North Dakota.

The native ponderosa pine is generally not affected. Future conservation plantings that include Scotch pine also should include conifer species that are tolerant to the pine wilt nematode to prevent potential loss of the effectiveness of the planting should pine wilt nematode enter our area.

Scotch Pine (*Pinus sylvestris*)

Key identifiers:

- Needles: two/fascicle, 1.5 to 3.5 inches long, 360-degree twist
- Cones: 1.5 to 2.5 inches long, dull gray-brown
- **Orange-brown peeling, flaky bark** on younger stems and branches

Scotch pine is a medium to large tree that's typically pyramidal when young. It becomes more rounded and open with age. The bark is favored by porcupines that can cause extensive damage. Small cones point back toward the base of the branch. This pine does well in shelterbelts and urban areas.



Mugo Pine (*Pinus mugo*) [Swiss mountain pine – *Pinus mugo* var. *uncinata*]

Key identifiers:

- Needles: two/fascicle, 1.5 to 3 inches long, stiff
- Cones: 1 to 2 inches long and generally round, dark brown and glossy
- The only pine in our area that grows as a **multi-stemmed shrub**

Mugo pine is a small to large-sized shrubby evergreen that varies in form and size. While often growing as a shrub, the tree form – Swiss mountain pine – sometimes is planted in North Dakota. It's not utilized in shelterbelts. Pine needle scale can be a serious pest.

Needles persist for more than five years. It keeps its dark green color year-round and resists winterburn. 'Tannenbaum' released from South Dakota State University and Hyland Splendor® released from North Dakota State University are very hardy and adapted to the region. Hyland Splendor® grows faster and has darker needles.



Austrian Pine (*Pinus nigra*)

Key identifiers:

- Needles: two/fascicle, 3 to 6 inches long, **needles don't snap cleanly when looped around** (unlike those of red pine)
- Cones: 2 to 3 inches long, shiny yellowish brown
- Sticky buds, irregular gray-brown to silver blocky bark

Austrian pine is rarely seen in North Dakota because of its marginal hardiness in our region. Nevertheless, a few great specimens can be found around the state.

Although it generally is considered salt-tolerant, its lack of cold hardiness is a bigger issue. It has an open, wide-spreading crown and becomes flat-topped as it gets older. Diplodia tip blight and pine moths can be serious pests.



Swiss Stone Pine (*Pinus cembra*)

Key identifiers:

- Needles: five/fascicle, 2 to 4 inches long, the darkest needles of the five-needled pines
- Cones: 2 to 3 inches long, **purple-brown at maturity**

Swiss stone pine is very slow growing and has a dense conical to columnar form with very fine-textured needles. New stems are covered with orange-brown hairs. It's extremely winter hardy and suffers very little winter injury.

Swiss stone pine is relatively new to the nursery trade in North Dakota. This species is not found as often as other pines. Prairie Statesman® ('Herma') is an NDSU release with green to blue-green foliage.



Very Uncommon Pines

Eastern White Pine (*Pinus strobus*)

Key identifiers:

- Needles: five/fascicle, 3 to 5 inches long, very soft
- Cones: **4 to 8 inches long, brown and narrow**

Eastern white pine is a large, fast-growing conifer native to the eastern U.S. Needles are serrated, unlike those of limber pine. It does best on acidic soils and protected sites; therefore, it is not recommended for windbreak plantings. In the Red River Valley, it may perform well when young, but it often becomes chlorotic after 20 to 30 years.



Jack Pine (*Pinus banksiana*)

Key identifiers:

- Needles: two/fascicle, 0.75 to 2 inches long, doubly twisted
- Cones: 1.5 to 2 inches long, yellowish brown
- Often unopened **cones point toward the ends of branches**

Jack pine is a small to medium pine that quickly loses the pyramidal form characteristic of young pine and assumes an open, somewhat irregular crown. It's not often planted in urban areas.

Jack pine is extremely drought tolerant; several trees have been growing in the Dickinson area since the 1920s. However, it will do poorly in soils with extremely high pH. In its native habitat, fire often is required to open cones and allow seed dispersal.



Red Pine (*Pinus resinosa*)

Key identifiers:

- Needles: two/fascicle, 4 to 6 inches long; **looped needles snap cleanly** (unlike those of Austrian pine)
- Cones: 2 to 2.5 inches long, light brown
- Flaky bark that is gray/pink

Red pine is broadly pyramidal in form. While red pine is a very hardy tree – native to northern Minnesota – it generally is not adapted to the high-pH soils often found in North Dakota. A few outstanding specimens are found around the state. In the Red River Valley, it may start out with good growth, but it often declines after 20 to 30 years.



Lodgepole Pine (*Pinus contorta*)

Key identifiers:

- Needles: two/fascicle, 1.5 to 3 inches long
- Cones: 1 to 2 inches long, tannish, **with a small prickle on the scale**
- Similar to jack pine, unopened cones point toward the end of the branch

Lodgepole pine is a tall, straight-trunked, narrow-crowned pine that is native to the Rocky Mountain and Cascade-Sierra ranges. In the western U.S., lodgepole pine is a major timber species for dimension lumber.

In dense stands, it forms clean, gradually tapering stems. It is being tested for survival and adaptability for conservation plantings. Of the four natural varieties, *latifolia* is the best adapted to North Dakota conditions.



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