

SIBERIAN ELM

(*Ulmus pumila*)

Description: Siberian elm is a member of the Ulmaceae or elm family. Siberian elm is a fast-growing, small to medium-sized tree that can reach a height of 50 to 70 feet with a spread of 35 to 50 feet. This tree is composed of a round crown of slender, somewhat drooping branches that create an open form. The bark is dark gray to brown in color with shallow furrows at maturity. Stems are slender, brittle, very light gray or grayish-green in color, can be slightly hairy but usually glabrous. Leaves are alternate, small, elliptical, smooth, singly-toothed, and approximately 1/2 to 2 1/2 inches in length. The leaves are dark green in color, tapering or rounded at the nearly symmetrical base, smooth above, and nearly hairless and paler in color beneath. Flowers are greenish, lack petals, and occur in small, compact, drooping clusters of 2 to 5 blossoms. Fruits of the tree or samaras, are winged, smooth, circular or obovate, contain one seed, and hang in clusters.

Siberian elm can be distinguished from American elm, *Ulmus americana*, by the differences in the leaves. American elm has leaves that are typically over 2 3/4 inches long, with strongly asymmetrical leaf bases, and leaf margins with double teeth compared to Siberian elm that has leaves that are 1/2 to 2 1/2 inches in length, nearly symmetrical base, and leaf margins that are entire or singly-toothed.

Plant Images:



Siberian elm



Leaves



Flowers

Distribution and Habitat: Siberian elm is native to China, Siberia, Manchuria, Korea, and is now widespread throughout the United States. The tree occurs on well-drained soil types, but thrives on well-drained fertile soils. Siberian elm can grow in moist soils along streams, but primarily invades dry, mesic, and sandy habitats. The tree tolerates a variety of conditions that include poor soils, low moisture, cold winters, droughts, and windy conditions. Siberian elm will typically establish in pastures, grasslands, and along roadsides.

Life History/Ecology: Siberian elm is a fast-growing tree that germinates readily. Seedlings germinate early in the growing season. The tree generally flowers before leaves begin to unfold in the spring from March through April. Fruits develop quickly and hundreds of seeds are disseminated by wind.

History of Introduction: Siberian elm is native to northern China, eastern Siberia, Manchuria, and Korea. The tree was introduced into the United States in the 1860s as an ornamental. Siberian elm has been commonly sold in the northern Great Plains as a drought and cold resistant hardwood. Farmers planted the tree in single-row field windbreaks during the 1960s. These windbreaks were designed to reduce soil erosion and protect adjacent crops from wind damage. Siberian elm is now established throughout most of the United States. In North Dakota, Siberian elm was widely planted as a windbreak in conservation plantings or, less frequently, as an ornamental. Siberian elm has been reported in 18 counties within the state, with the majority of the species located in eastern and west-central North Dakota. At this time, the distribution of the invasive populations of this species have not been determined.

Effects of Invasion: Siberian elm is an aggressive species that can invade and out-compete desirable native vegetation. The tree is able to establish on sparsely vegetated areas and dominate disturbed prairies within just a few years.

Control:

Management objectives for Siberian elm control should involve early detection and rapid response once populations are detected. Large, mature stands of Siberian elm are almost impossible to completely eradicate, but small populations of the species can be adequately controlled. Siberian elm reproduces by seed production; therefore, control measures that reduce seed production or dispersal should be implemented. Infestations should be monitored for several years to prevent re-establishment.

Mechanical - Girdling is an effective control method for Siberian elm. When girdling, a band of bark around the tree trunk slightly deeper than the cambium should be removed by making two parallel cuts 3 to 4 inches apart. The xylem of the tree should remain intact because if girdled too deep, Siberian elm will respond by resprouting. Girdling is most effective during the late spring to mid-summer when the bark peels away easily and the sap is flowing through the tree. Trees that are girdled generally die within 1 to 2 years and will not re-sprout if cut properly. Hand pulling or digging is effective for small trees. Repeated prescribed burns in fire-adapted communities can control small seedlings. Larger saplings will not be controlled by burning.

Chemical - Glyphosate and triclopyr can be effective in controlling Siberian elm. Cut-stump methods can be effective if the trunk is cut as close to the ground as possible and herbicides are immediately applied to the cut surface of the tree. A basal bark spray treatment may also be successful.

Contact your local county extension agent for recommended use rates, locations, and timing.

Biological - No biological control agents are available for Siberian elm control, but the tree is susceptible to Tubercularia canker, Botryodiplodia canker and wetwood. Cankerworm is also a common pest to Siberian elm.

References:

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- Siberian elm and leaves photographs courtesy of Patrick Breen, Oregon State University (www.invasive.org).
- Flowers photograph courtesy of USDA-NRCS PLANTS Database/ Herman, D. E. et al. 1996. *North Dakota tree handbook*. USDA NRCS ND State Soil Conservation Committee; NDSU Extension and Western Area Power Admin., Bismarck, ND.