



Siberian Elm

Ulmus pumila L.
Elm family (Ulmaceae)

NATIVE RANGE

Northern China, eastern Siberia, Manchuria and Korea

DESCRIPTION

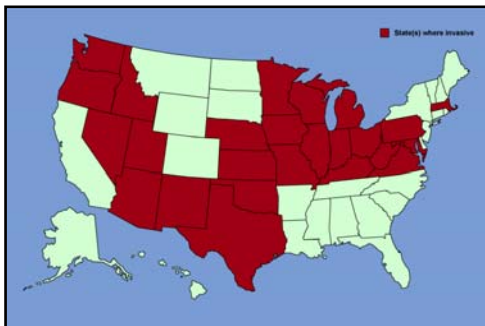
Siberian elm is a fast-growing tree in the elm family (Ulmaceae) distinguished by small toothed leaves about 1-2½ in (3-7 cm) long and half as wide, and pointed at the tip. Unlike other elms, the leaf base is usually symmetrical, forming a nearly even "V". Leaves are smooth and dark green above, paler and nearly hairless beneath, and alternate from side to side along twigs. Mature trees reach a height of 50-70 ft. (16-22 m.), with a round crown of slender, spreading branches. The bark is rough, gray or brown, and shallowly furrowed at maturity. Twigs are nearly hairless with small, blunt buds. Flowering occurs in the springtime. The small greenish flowers lack petals and occur in drooping clusters of 2 to 5. After flowering, a single seed forms in the center of each smooth, flattened, circular, ½ in (10-15 mm) wide fruit.



Other species of elms (*Ulmus*) and the close relative *Zelkova*, especially younger plants, look similar to Siberian elm. Some may even confuse it with choke-cherry (*Prunus serotina*) and hackberry (*Celtis* sp.). The native slippery elm and American elm typically have leaves that are greater than 3 in (7.3 cm) long, with unequal heart-shaped leaf bases, and leaf margins with double teeth.

ECOLOGICAL THREAT

Dry to mesic prairies and stream banks are vulnerable to Siberian elm invasion. Thickets of seedlings soon form around seed-producing trees, bare ground areas, animal and insect mounds, and other disturbed areas. Siberian ElmWind carries seed to distant areas where new colonies can form. This tough exotic survives under conditions not easily tolerated by other species, allowing it to take advantage of open ground and resources otherwise used by native plants. Fast growing seedlings of Siberian elm quickly overtake native vegetation, especially shade-intolerant species. This often leads to invasion by additional weedy species, compounding the problem.



DISTRIBUTION IN THE UNITED STATES

Siberian elm is known to occur in 43 states (USDA PLANTS) and reported to be invasive in natural areas in 25 states (WeedUS Database).

HABITAT IN THE UNITED STATES

Dry and mesic prairies and areas along stream banks in Minnesota and forested areas and high elevations in Arizona.

BACKGROUND

Siberian elm was introduced to the U.S. in the 1860's for its hardiness and fast growth in a variety of moisture regimes and habitats, including droughts and cold winters. It is resistant to Dutch elm disease. This elm continues to be promoted, especially in the Great Plains in spite of weak limbs and susceptibility to insect attack.

BIOLOGY & SPREAD

Seeds are produced early in spring and spread by the wind. Germination rate is high and seedlings soon establish in the bare ground found early in the growing season.

MANAGEMENT OPTIONS

For long term management of Siberian elm, reduction of seed sources is essential.

Chemical

To avoid resprouts after cutting or girdling, cut stumps may be treated with systemic herbicides such as glyphosate (e.g., Roundup®) and triclopyr (e.g., Garlon®). After spring sap flow ceases and during the growing season, Minnesota DNR State Parks Southern Region Resource Management apply 4 parts water to 1 part glyphosate (based on 41% active ingredient glyphosate concentrate) with a hand sprayer to cut stumps. The entire stump should be saturated with the herbicide to achieve the most effective control. Garlon® 4 (triclopyr ester formulation) can be applied as a cut stump or basal bark treatment. For basal bark, apply a 20-percent solution in horticultural oil (2.5 quarts per 3-gallon mix) with a penetrant (check with herbicide distributor) to young bark as a basal spray in winter (January to February) or summer-fall (June to October). Cut stems can be immediately treated with glyphosate herbicide as a 20-percent solution (2.5 quarts per 3-gallon mix) in water with a surfactant.



Manual

During the growing season, seedlings can be hand pulled and small trees carefully removed by a grub hoe or weed wrench. Trees girdled in mid-May to early July will die over 1-2 years without sprouting if cut properly. To remove a band of bark from the wood, make two parallel cuts 3-4 inches apart, then knock bark off with a blunt object such as the back of an axe head or dull end of a girdling bar. The xylem must remain intact; if girdled too deeply the tree will respond as if cut down and will resprout. On sites with few seed sources, the large trees can be cut down and resprouts trimmed as needed.

Fire

A regular regime of prescribed burning in fire-adapted communities will kill seedlings.

USE PESTICIDES WISELY: Always read the entire pesticide label carefully, follow all mixing and application instructions and wear all recommended personal protective gear and clothing. Contact your state department of agriculture for any additional pesticide use requirements, restrictions or recommendations.

NOTICE: mention of pesticide products on this page does not constitute endorsement of any material.

CONTACT

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SUGGESTED ALTERNATIVE PLANTS

When planting shade trees near prairie sites, consider using trees native to your area, especially those that are not prolific colonizers. Some appropriate examples are bur oak (*Quercus macrocarpa*) or other oaks native to your area, and basswood (*Tilia americana*). Check with your state native plant society or the Lady Bird Johnson Wildflower Center's Native Plant Information Network for recommendations.

OTHER LINKS

- <http://www.invasive.org/search/action.cfm?q=Ulmus%20pumila>

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PHOTOGRAPHS

U.S. Department of Agriculture PLANTS Database

REFERENCES

Brown, R.G. and M.L. Brown. 1972. Woody Plants of Maryland. Port City Press, Baltimore, MD. 347 pp.

Kennay, J. and G. Fell. 1990. Illinois Vegetation Management Guideline: Siberian elm (*Ulmus pumila*). Illinois Nature Preserves Commission, Springfield, IL.

Rehder, A. 1940. Manual of Cultivated Trees and Shrubs, 2nd ed. MacMillan Co., New York. 996 pp.

Remaley, T. 2000. Southeast Exotic Pest Plant Council Invasive Plant Manual. In Barger, C.T., D.J. Moorhead, G.K. Douce, R.C. Reardon & A.E. Miller (Tech. Coordinators). 2003. Invasive Plants of the Eastern U.S.: Identification and Control. USDA Forest Service - Forest Health Technology Enterprise Team. Morgantown, WV USA. FHTET-2003-08.