

TREE OF HEAVEN

Ailanthus altissima



Description: Tree of heaven is a deciduous tree that grows to 80 feet. The stems are smooth with pale gray bark. Leaves are alternate, 1-4 feet long, and compound with 11-25 leaflets with 1 or more glandular teeth near the leaf base. Flowers are yellow-green and located near the branch tips with male and female flowers on separate trees. Its seeds are in twisted flat 'wings' borne in clusters. All parts of this tree have a very strong odor.



Native range: Central China (<http://www.nps.gov/plants/alien/fact/aial1.htm>)



Ecological threat: This plant threatens woodland edges and forest openings. Tree-of-heaven is a prolific seed producer, grows rapidly, and can overrun native vegetation. Once established, it can quickly take over a site and form an impenetrable thicket. Ailanthus trees also produces toxins that prevent the establishment of other plant species. The root system is aggressive enough to cause damage to sewers and foundations.

Current North American Range: Tree of heaven is currently very common throughout Iowa, Missouri, Illinois, Indiana, Ohio, and Michigan. It is also known to be in eastern Wisconsin and southern Ontario.

Current Midwest general distribution, including southern Ontario Not Known Isolated Locally Abundant Widespread

Early Detection and Rapid Response Can Help Stop the Spread!

TREE OF HEAVEN, *Ailanthus altissima*

MANAGEMENT OPTIONS: (<http://www.nps.gov/plants/alien/fact/aial1.htm>)

Elimination of *Ailanthus* requires diligence, due to its abundant seed production, high seed germination rate, and vegetative reproduction. Followup monitoring and treatment when needed should be an integral part of any serious *ailanthus* management program. Regardless of method selected, treated areas should be rechecked one or more times a year and any new suckers or seedlings treated (cut, sprayed or pulled) as soon as possible, especially before they are able to rebuild root reserves. Establishing a thick cover of trees (preferably native, and non-invasive) or grass sod will help shade out and discourage establishment of *ailanthus* seedlings. Targeting large female trees for control will help reduce spread of *ailanthus* by seed.

Mechanical methods

Young seedlings may be pulled or dug up, preferably when soil is moist. Care must be taken to remove the entire plant including all roots and fragments, as these will almost certainly regrow. Root suckers appear similar to seedlings, but would be connected to a pre-existing lateral root, and would be nearly impossible to remove effectively. Cutting alone is usually counter-productive because *ailanthus* responds by producing large numbers of stump sprouts and root suckers. However, for small infestations, repeated cutting of sprouts over time can exhaust the plants reserves and may be successful if continued for many years or where heavy shade exists. If possible, the initial cutting should be in early summer in order to impact the tree when its root reserves are lowest. Cutting large seed producing female trees would at least temporarily reduce spread by this method.

Chemical methods

Foliar sprays applied when trees are in full leaf are very effective, and should be the method of choice where *ailanthus* size and distribution allow effective spray coverage of all foliage without unacceptable contact with nearby desirable vegetation or applicator. Where *ailanthus* is in association with other exotic weed species, as is often the case, foliar spray allows treatment of the entire area at one time. Limitations of the method are the seasonal time frame, the need to transport a larger, more diluted volume of spray material, and the fact that rapid growing *ailanthus* are often out of effective reach.

Basal bark application is one of the easiest methods and does not require any cutting. It works best during late winter/early spring and in summer. The base of the tree stem must be free of snow, ice, or water on the bark from recent rainfall, though precipitation following application is inconsequential. Late winter/early spring (February 15-April 15, Mid-Atlantic) is generally the most productive time, since vegetation near the base of the trees is usually absent or leafless. Late spring and early summer applications (April 15-June 1, Mid-Atlantic), when plant fluids are moving upwards to support new growth, are questionable. Application during the summer (June 1-September 15, Mid-Atlantic) works very well as long as vegetation is not a hindrance, and allows lower concentrations of herbicide to be used. Fall to mid-winter applications (October-January) have given poor results.

The hack-and-squirt or injection method is very effective and minimizes sprouting and suckering when applied during the summer. Root suckering will be an increasing problem in the fall, winter and spring.

The cut stump method is useful in areas where the trees need to be removed from the site and will be cut as part of the process. While situations exist that dictate this method over the others given above, felling trees is usually less effective in killing the root system, slower, more labor intensive, and more hazardous to personnel than other methods. This method is likely to be most successful during the growing season, with diminishing success through the early fall.

For more information on control and management of this species, please visit the following Web sites:

www.usda.plants.gov, www.nps.gov/plants/alien/factmain.htm, tncweeds.ucdavis.edu/comtrol.html, dnr.wi.gov/invasives/plants.htm, www.invasivespeciesinfo.gov/plants/main.shtml, <http://www.nps.gov/plants/alien/fact/pope1.htm>

Early Detection and Rapid Response Can Help Stop the Spread!

