

## TREES

## Tree of Heaven

*Ailanthus altissima* (P. Mill) Swingle  
Simaroubaceae Family

Origin: Northeastern and Central China and Taiwan

**Background**

Also called shumac, stinking sumac, Chinese sumac, and ailanthus, it was introduced by a Pennsylvania gardener in 1748 and was made available commercially by 1840. It gained some notoriety as the species featured in the book "A Tree Grows in Brooklyn," by Betty Smith.



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**Distribution and Habitat**

Tree of heaven is reported to be invasive in natural areas in 30 states across continental U.S. and Hawaii. It is highly adaptable to disturbance and a huge range of soil types and conditions, grows best in full sun and is tolerant of drought.

**Ecological Threat**

A common tree in urban areas where it causes damage to sewers and structures, ailanthus poses a greater threat to agriculture and natural ecosystems. It is a vigorous growing tree and prolific seeder that establishes dense stands that push out natives. Tree of heaven contains chemicals, including ailanthone, that have been found to have strong allelopathic (herbicidal) effects on the growth of other plants which help it establish and spread.

**Description and Biology**

- Plant: deciduous tree that can reach 70 ft. in height; twigs with smooth, pale gray bark, and twigs that are light chestnut brown, especially in the dormant season; dioecious meaning plants are either male or female; wood soft, weak, coarse-grained and creamy white to light brown in color; leaves, stems and some flowers have a strong, unpleasant to offensive odor likened to cat urine or rotting peanuts or cashews.
- Leaves: alternate, large (1-4 ft. long), compound, with 11-25 smaller leaflets, each with one to several glandular teeth near the base.
- Flowers, fruits and seeds: large showy clusters of small yellowish-green flowers produced during June; in summer, flat, twisted, single-seeded winged fruits or samaras are produced on female trees and may remain on trees for long periods of time; individual trees may produce an estimated 325,000 seeds per year.
- Spreads: reproduces by seed and by vigorous re-sprouting, especially in response to injury such as breakage or cutting.
- Look-alikes: compound-leaved shrubs and trees like staghorn sumac (*Rhus typhina*), ash (*Fraxinus* sp.), black walnut (*Juglans nigra*), and hickory (*Carya* sp.). Sumac has fuzzy, reddish-brown stems and leaves; ash species

have opposite leaves; ash, black walnut, hickory and sumac leaf margins are completely to mostly toothed; black walnuts have large green fruits.

### Prevention and Control

Do not plant tree of heaven or spread its seeds when moving soil from infested areas. Before attempting control, ensure that you are not mistaking a native species like staghorn sumac, ash or walnut for tree of heaven. Elimination of tree of heaven requires diligence. Targeting large female trees for control will help reduce spread by seed. Because vegetative spread by male and female trees will continue to be a threat, elimination of all trees must be the long term goal. Systemic herbicides with active ingredients like glyphosate and triclopyr are most effective and can be applied to bark, cut stems or foliage (see [Control Options](#)).

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