

TREE OF HEAVEN

Ailanthus altissima

Tree of heaven Family (Simaroubaceae)

DESCRIPTION

Tree of heaven is a deciduous tree most commonly found in riparian areas and disturbed inland areas.

Tree of heaven grows 30–65 feet tall, while its trunk can reach 2–3 ft in diameter. It has a broad, dome-shaped crown. The bark is gray and smooth, becoming darker and more scarred with age. The twigs are stout and pale chestnut-brown with rounded buds. The leaves are alternate, pinnately compound, and 1–3 feet long. Each compound leaf comprises 11–25 smaller lance-shaped leaflets, which have 2–4 rounded auricles (“ears”) near the base. The leaves have an unpleasant odor when crushed.

REPRODUCTION

Tree of heaven reproduces both from seed and by sprouting vegetatively from stumps and roots. Trees reach reproductive maturity between 10 and 20 years of age. Clusters of small, yellow-green flowers appear in June near the branch tips. Female trees bear winged fruits in September and October. The flat, twisted, papery fruits turn from pink to red-brown with age and hang in large clusters that can last through the winter. Measuring 1–2 inches long, each fruit bears a single seed. A single tree can produce over 300,000 seeds in a year. Seeds are wind-dispersed, but can also spread by water, birds, and machinery. Individual trees live to about 50 years, but new root sprouts often prolong the tree’s life span.

IMPACT

Tree of heaven often forms dense monocultures. The bark and leaves reportedly produce allelopathic chemicals that accumulate in the soil and



can cause mortality in other vegetation. The foliage is unpalatable to browsing wildlife.

KEY FACTORS

- u Rapid growth and spread from lateral root suckers.
- u Persistent resprouts from cut stumps.
- u Copious seed production.
- u Seeds viable for no more than 1 year.
- u Seedlings somewhat shade-intolerant.

TREATMENT OPTIONS

- u Pull seedlings before a taproot is established (roughly 3 months after germination) while the soil is moist and loose. If a taproot has already formed, dig around the base of the plant to completely remove the root system and prevent resprouts. Grubbing out the taproot can be an effective way of killing the plant, but is a slow method best used to control small infestations. Make sure you remove the entire root, as any portion left in the soil can produce a new plant.
- u Cut stems of mature trees (up to 12 inches in diameter) early in the spring. Cut a second time at the end of the growing season around June or July. This strategy aims to prevent

seed production with the first cut and to exhaust the plant's energy reserves with the second cut.

- u **Cut and treat** trunks or stems with a chainsaw, preferably during the growing season, and before trees have begun to flower. Some practitioners have had success by painting a 50 percent glyphosate solution on the stump immediately after cutting.

DISPOSAL

Slash from trees that have not produced seed can be piled for wildlife cover. Any seeds present are best collected, bagged, and disposed of. If not, you will need to return to the site to pull any seedlings that have germinated.

FOLLOW-UP

You'll need to cut resprouts repeatedly for 3–4 years to eventually kill off the plant's root system. New seedlings and root suckers can be either

pulled or cut and treated with herbicide. Establishing a thick shade over tree of heaven seedlings will slow down their growth.

INTERESTING FACTS

Tree of heaven is native to China and was introduced to America in the late 1700s as an ornamental species. It resembles certain trees native to the East Coast, such as sumacs, ash and black walnut. The wood is weak and of little commercial value, although it can be used to produce paper pulp. It has long been used in Chinese medicine for reproductive disorders and to calm spasms. In France, tree of heaven leaves are fed to the *Ailanthus* moth caterpillar, which yields a silk cheaper and stronger than the fine mulberry silk of China. Invasive in urban areas, tree of heaven was the tree of fame in the book *A Tree Grows in Brooklyn*.

Notes