



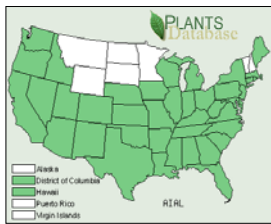
# Tree-of-Heaven *Ailanthus altissima*

**Common Names:** tree-of-heaven, ailanthus, Chinese sumac, and stinking sumac, copal tree and varnish tree

**Native Origin:** Eastern and central China

**Description:** Tree-of-heaven is a rapidly growing, deciduous tree in the mostly tropical quassia family (Simaroubaceae). Mature trees can reach 80 feet or more in height. It has smooth stems with pale gray bark, twigs which are light chestnut brown and large compound leaves. Small yellow-green flowers have 5-6 petals and are borne in dense clusters near ends of upper stems. Pink to tan fruit is winged with a single seed in the middle. Roots have aggressive rhizomes. All parts of the tree, especially the flowers, have a strong, offensive odor similar to peanuts or cashews. Tree-of-heaven reproduces both sexually (seeds) and asexually (vegetative sprouts). Established trees also produce numerous suckers from the roots and re-sprout vigorously from cut stumps and root fragments.

**Habitat:** Disturbed soils, fields, roadsides, fencerows, woodland edges, forest openings, and rocky areas. It thrives in poor soils and tolerates pollution. It is not found in wetlands or shaded areas.



**Distribution:** This wide-spreading species is reported from states shaded on Plants Database map. It is reported invasive in AZ, CA, CT, DC, DE, FL, HI, IN, KY, LA, MA, MD, MI, MO, NC, NH, NJ, NM, NY, OH, OK, OR, PA, RI, SC, TN, VA, WA, WI, and WV.

**Ecological Impacts:** Tree-of-heaven is a prolific seed producer, grows rapidly, forms thickets, dense stands, and can overrun native vegetation. It colonizes by root sprouts and spreads by prolific wind- and water-dispersed seeds. Once established, it can quickly take over a site and form an impenetrable thicket. They produce toxins that prevent the establishment of other plant species.

### Control and Management:

- **Manual**-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. Cutting large seed producing female trees would at least temporarily reduce spread by this method.
- **Chemical**- It can be effectively controlled using any of several readily available general use herbicides such as triclopyr or imazapyr. Follow label and state requirements. The herbicides may be applied as a foliar (to the leaves), basal bark, cut stump, or hack and squirt treatment. 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 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. The hack-and-squirt or injection method is very effective and minimizes sprouting and suckering when applied during the summer.
- **Biocontrol** - A potential biological control for ailanthus may lie in several fungal pathogens, (*Verticillium dahliae* and *Fusarium oxysporum*) that have been isolated from dead and dying ailanthus trees in New York and in southern and western Virginia.

**References:** <http://www.nps.gov/plants/alien/fact/aial1.htm>, [www.nps.gov/plants/alien](http://www.nps.gov/plants/alien), [www.forestryimages.org](http://www.forestryimages.org), Czarapata, Elizabeth J. Invasive Plants of the Upper, *an Illustrated Guide to their Identification and Control*, 2005, p. 87-88, Miller, James H., Nonnative Invasive Plants of Southern Forests, *A Field Guide for Identification and Control* USDS FS, SRS-62 p. 2-3