

## Be on the Lookout for an Invasive Duo: Tree of Heaven and Spotted Lanternfly

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If you see an invasive [tree of heaven](#) (*Ailanthus altissima*), you may also find another invasive species: the [spotted lanternfly](#) (*Lycorma delicatula*), which uses tree of heaven as its primary host. The relatively recent discovery and spread of the spotted lanternfly in the Mid-Atlantic Region of the U.S., including its preference for tree of heaven, makes it important to locate and monitor these trees in efforts to manage this invasive insect. Eliminating tree of heaven on the landscape removes the preferred host for the spotted lanternfly.

The spotted lanternfly does infest some other desirable woody plant species. These include many fruit bearers (apples, grapes, plums, and hops, among others) and ornamentals. It also feeds on other native tree species, such as walnut, oaks, and maples. The Summer 2018 edition of the *Forest Matters* stewardship newsletter includes an [article about this insect](#).

If you find invasive trees of heaven growing on your property, inspect them frequently to see if the spotted lanternfly is present. **If you find the spotted lanternfly, contact your State Agriculture Department or the [Animal and Plant Health Inspection Service](#).**

### What is tree of heaven?

Tree of heaven, also known as Ailanthus, grows in the Eastern United States from Maine to Florida and west to California. This native of China was introduced to the United States as an ornamental tree in the late 1700s. [Many States now report it as invasive](#).

Tree of heaven grows well in poor or dry soil and in polluted cities. It rapidly invades disturbed areas of any habitat, including roadsides, fields, and forest openings. Tree of heaven disrupts native ecosystem functions, particularly since it can regenerate so vigorously. It can form dense thickets as it spreads by both root suckers and seed. Rapidly growing root suckers create vegetative sprouts that result in many clones growing together that take over large areas. If a tree is cut, stump sprouts appear.

Tree of heaven is dioecious, meaning that a tree is either male or female. One female tree can produce more than 300,000 winged seeds in a year that hang in large clusters from the branches. It displaces native vegetation once established. Tree of heaven also produces chemicals that inhibit the growth of other plant species, which gives it a competitive advantage.

### How do I identify tree of heaven?

Tree of heaven can grow up to 90 feet. Its bark is pale gray to brownish and smooth. The bark of large trees has a texture like that of cantaloupe skin. The large compound, alternate leaves grow from 1 to 4 feet long. Each leaf has many leaflets. Each leaflet has one or two protruding bumps called glandular teeth on small lobes at its base. The crushed leaves and stems have a foul odor that is sometimes compared to rotten peanut butter.



A tree of heaven grows between a sidewalk and a building. (Courtesy photo by Annemarie Smith, ODNR Division of Forestry, Bugwood.org)



Compound leaves of tree of heaven with seed clusters. (Courtesy photo by Chuck Barger, University of Georgia, Bugwood.org)



The base of this tree of heaven leaflet has two glandular teeth on its lobes. (Courtesy photo by James Miller, USDA Forest Service, Bugwood.org)

### What other trees look like tree of heaven?

There are some native woody plant species that look like tree of heaven. Since the spotted lanternfly prefers tree of heaven, it's important to be able to tell it apart from native, ecologically important woody species.

Staghorn sumac (*Rhus typhina*) and smooth sumac (*Rhus glabra*) look like young trees of heaven, but the sumacs are shrubs and never grow taller than 30 to 40 feet. Sumacs do have that clonal, clumped growth habit due to root suckering, just like young trees of heaven. However, sumac leaves have teeth on their edges whereas tree of heaven has smooth leaf edges except for a few small lobes at the leaf base. Staghorn sumac has velvety stems while tree of heaven has smooth stems. Sumacs are important sources of food and shelter for wildlife.

Several other important native tree species that are important to wildlife generally resemble tree of heaven. The native black walnut (*Juglans nigra*) has dark brown, rough, furrowed bark with a diamond-like pattern and toothed leaves. Both black walnut and butternut (*Juglans cinerea*) have toothed leaves and alternate branching, while tree of heaven has mostly smooth leaf edges. Ashes (*Fraxinus*) also look like tree of heaven, but the branches are arranged opposite on the stem instead of alternate like all the previously described species. Tree of heaven is the only species that has foul-smelling leaves and bark.

### Leaf Comparison



Tree of heaven leaves with mostly smooth edges. (Courtesy photo by Richard Gardner, Bugwood.org)



Sumac leaves with toothed edges. (Courtesy photo by Robert Videki, Doronicum Kft., Bugwood.org)



Black walnut leaves with toothed edges. (Courtesy photo by Paul Wray, Iowa State University, Bugwood.org)

## Bark Comparison



*Tree of heaven bark. (Courtesy photo by Annemarie Smith, ODNR Division of Forestry, Bugwood.org)*



*Black walnut bark. (Courtesy photo by Chris Evans, University of Illinois,*

### How do I get rid of tree of heaven?

Preventing tree of heaven from getting a foothold and spreading is a diligent process, whether it's done mechanically or chemically. Pulling up small seedlings by their roots when the soil is moist is the easiest way to control tree of heaven. Once they become larger trees, hacking the bark and applying systemic herbicide to the cuts (or cut stumps), or spraying herbicide completely around the base of the trees, is required to kill them. Smaller infestations can be treated by spraying the leaves. Followup monitoring is essential to target and kill either sprouts that grow from roots or stumps or germinants that grow from seeds in the soil. [Penn State Extension has more information](#). An [article](#) from the Penn State Center for Private Forests also provides insights into controlling tree of heaven.



*Tree of heaven seedling. (Courtesy photo by Leslie J. Mehrhoff, University of Connecticut, Bugwood.org)*

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