

You Ain't From Around Here: Exotic Invasive of the Quarter

Tree-of-heaven (*Ailanthus altissima* (Mill.) Swingle)

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I will be featuring an invasive plant species in each newsletter. This section will provide resources to help you identify and control these plants, hopefully before they become more of a problem!

Exotic invasives are non-native plants that are able to thrive and spread aggressively outside their natural range. When spread is extensive, they can alter ecosystem function by replacing native species, changing forest structure, and decreasing forest productivity and biodiversity. Some key characteristics include: prolific seeding, efficient dissemination, adaptability to different environments, rapid growth, and lack of natural controls. There are 115 exotic invasives in Virginia. Landowners can help stop invasives before they get out of control by 1. inspecting their property regularly, 2. maintaining a healthy forest with minimal disturbance, 3. treating invasives as soon as they are detected and 4. rehabilitating sites after eradication.

Tree-of-heaven, also known as Chinese sumac or stinking sumac, is one of the most common invasive trees in Virginia; it grows vigorously in sunny locations, even on poor sites, and is often seen along roadsides and in disturbed areas. This tree is allelopathic, meaning its roots secrete chemicals which reduce or eliminate the growth of other nearby plants. Once tree-of-heaven is well-established, it forms dense, impenetrable thickets and is very difficult to get rid of. The root systems grow vigorously and can damage sewers and foundations. It can reproduce either by root sprouting or seeds (one study estimated that a single tree could produce over 300,000 seeds a year!!).

Tree-of-heaven was introduced to the eastern United States in 1784 by a Pennsylvania gardener; in the 1800's, it was brought to California from Asia. By 1840, it was commonly sold in nurseries. Even today, despite the invasiveness of this tree, seeds can be purchased through on-line nurseries, making control and eradication difficult. Tree-of-heaven is currently found in 42 states, ranging from Maine to Florida, and west to California.

Here's how to identify tree-of-heaven

Growth: deciduous tree up to 80 feet tall and 6 feet in diameter; dioecious (male and female flowers are on separate trees).

Leaves: alternately arranged, odd or pinnately compound, 1 to 3 feet long with 11-25 lance-shaped leaflets with glandular teeth near the base; leaves smell like peanut butter, cashews or burnt coffee when crushed.

Bark: light-brown to gray, rough; twigs stout, chestnut brown to reddish-tan, smooth or velvety.

Flowers: April to June; large terminal clusters; small yellow-greenish with 5 petals and 5 sepals

Fruit: July to February; clusters of winged-shaped, twisted, tan to light-brown seeds on female trees; 1 to 1.5 inches long.



Clockwise: (a) Tree-of-heaven seeds, (b) compound leaves, (c) bark; and (d) pith

(photo credits: (a) Chuck Barger, University of Georgia, (b-c) James Miller, USDA Forest Service, and (d) John Siler, Virginia Tech)

Here's what you can do to control tree-of-heaven:

Mechanical: Small seedlings can be pulled from moist soil as they appear – make an effort to remove the entire root system – any pieces left in the ground may sprout! Saplings can be cut at ground level, but this needs to be repeated several times to fully exhaust the carbohydrate supply in the root systems. A single cut can result in excessive stump sprouting and exacerbate the problem. If only one cut is possible, cut while the trees are blooming and root resources are at their lowest.

Chemical: Once tree-of-heaven is well-established, herbicides are usually needed for effective control. For larger trees, a midsummer stem injection of Garlon 3A, Pathway, Pathfinder II or Arsenal AC is most effective (follow labels for concentrations). On felled trees, apply herbicides to stumps immediately after cutting. You do not need to be certified to apply herbicides with triclopyr or glyphosate as the active ingredients, but always carefully follow the application instructions on the label.



Crown of a mature tree-of-heaven

(photo credit: John Siler, Virginia Tech)

References and Additional Information

Invasive Plants of the Eastern United States: Identification and Control <http://www.invasive.org/eastern/>

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Rhoads, A.F., and Block, T.A. 2002. Invasive species fact sheet: Tree-of-heaven. <http://www.paflo.org/Ailanthus%20altissima.pdf>

Swearingen, J.M. and Pannill, P. Tree-of-heaven. <http://nps.gov/plants/alien/fact/aial1.htm>.

The United States National Arboretum: <http://www.usna.usda.gov/Gardens/invasives.html>