

INVASIVE PLANTS OF OHIO

Fact Sheet 17

Tree-of-Heaven

Ailanthus altissima

DESCRIPTION:

Tree-of-heaven is a rapidly growing non-native tree that reaches a maximum height of about 80 feet. The bark is gray to brownish-gray, often turning nearly black with age. Twigs and stems range from light to dark brown. The leaves are pinnately compound with 11-41 leaflets. Each leaflet has an entire margin except for 1-5 small gland-tipped teeth near its base. In late spring, tree-of-heaven produces dense clusters of small, 5-6 petaled, yellow-green flowers near the ends of the upper branches. Seeds develop in the fall and may remain on the tree throughout the winter. Each seed is borne in the middle of a twisted, flattened, wing-like structure. The wood is light in color and weak, rotting quickly when dead. Leaves and young stems have an unpleasant odor that resembles rancid peanut butter. Care should be taken in identification to avoid confusing tree-of-heaven with native species such as walnut and sumac.



Division Photo

HABITAT:

Tree-of-heaven can be found in nearly any habitat except wetlands. It thrives in disturbed soils in both urban and natural areas. In natural areas, tree-of-heaven invades fencerows, roadsides, woodland edges, successional forests, and open forest thickets. Tree-of-heaven thrives in poor soils and tolerates pollution well, a reason why it is often planted in urban areas.

DISTRIBUTION:

Tree-of-heaven was introduced to the United States from China. It was first brought to Philadelphia as a garden plant in 1784. By the mid 1800's, it was well established as a nursery tree because of its ability to grow nearly anywhere. Chinese immigrants that came to the United States to work in the gold mines also introduced it to California as a medicinal plant. Absent only from the northern plains of the United States, tree-of-heaven is found throughout Ohio. It poses the greatest threat to successional forest areas of Ohio.

PROBLEM:

One mature tree-of-heaven can produce up to 350,000 seeds per year. These seeds are easily airborne and can be transported by water and birds as well. Germination of seeds is quite high. Mature trees also reproduce extensively by sending up root suckers and sprouts from cut stumps. Sapling growth can reach 3-4 feet a year and can outgrow nearly any native tree, out-competing natives for light. The roots give off a toxin that acts as a herbicide that can kill or inhibit the growth of other plants. Tree-of-heaven is somewhat shade-tolerant and can grow quickly when released by gaps in the forest canopy caused by windfalls, logging or defoliation due to insect pests such as gypsy moth.



Tree-of-Heaven in the understory

Division Photo

CONTROL:

Mechanical: Young seedlings may be successfully hand-pulled if the entire root system is removed. If small portions of the root system are left, regeneration is likely. Cutting alone is usually not effective since this merely stimulates aggressive root suckering and stump sprouting. However, cutting large trees can help control its spread by removing seed-producing trees.

Chemical: It is of utmost importance to kill the entire root system. Systemic herbicides such as Roundup® or Glypho® may be effective as a foliar spray on seedlings. For larger trees,

cut stump treatment or basal bark application using a systemic herbicide such as Garlon 4® is best especially if treated in late winter or late summer. Using a small amount of Tordon K® with the Garlon 4® mixture will increase success of basal bark or cut stump application, but care must be used as Tordon K® can translocate from the root system of the target tree and kill non-target plants.

Biological: No biological controls are currently available.

ADDITIONAL INFORMATION SOURCES:

Hoshovsky, M. 1999. Element Stewardship Abstract for Tree-of-Heaven. The Nature Conservancy.

Bartlow, J., K. Johnson, M. Kertis, T. Remaley, S. Ross, E. Simet, T. Smith, D. Soehn and G.Taylor. 1996. Invasive Exotic Pest Plants in Tennessee. Tennessee Exotic Pest Plant Council.

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FOR MORE INFORMATION:



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