



Ailanthus on the Wayne National Forest

Ailanthus (*Ailanthus altissima*), also called tree-of-heaven, pictured above, has been in North America for more than 200 years. Only in the last 60 years has it succeeded in moving from roadsides, large and small, as well as big cities and small towns. It spreads aggressively via wind-blown seed and root systems, becoming a major threat to forests.

- Ailanthus is an aggressive non-native invasive tree native to China.
- Ailanthus was first introduced in 1784 by a gardener in Philadelphia, PA.
- Sapling growth can reach 3-4 feet in one year; out growing nearly any native tree species. Mature trees can reach 80 feet in height.
- Ailanthus has male and female flowers on separate trees.
- Typically trees produce seeds after 3-5 years.
- One female tree can produce up to 350,000 seeds per year. These highly conspicuous papery seed clusters persist throughout the winter. Seeds are easily distributed by wind, compared with oak acorns which are dependent upon wildlife for dispersal.
- Ailanthus is allelopathic. It produces chemicals that influence the growth, survival, and reproduction of other plants.

Contact Us

The Wayne National Forest offices are open 8- 4:30 Monday through Friday.

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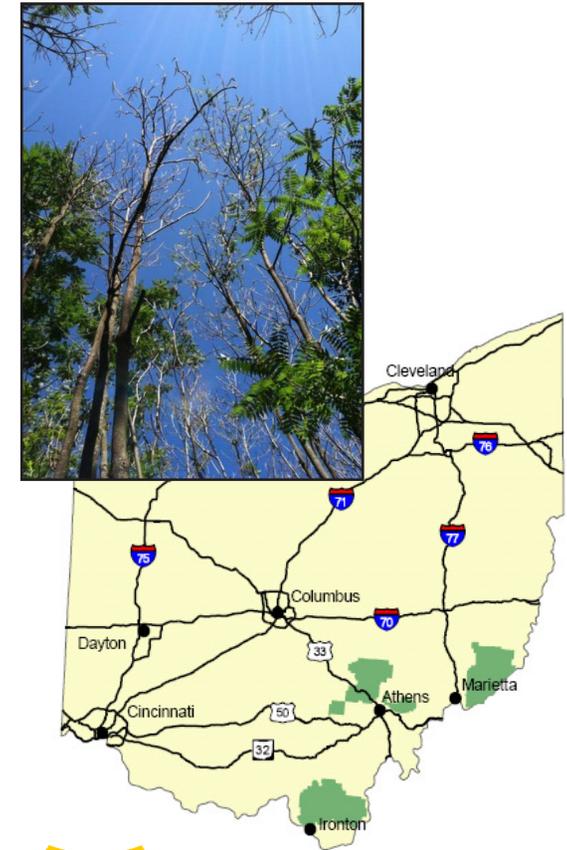
Federal relay system for the deaf and hearing impaired: 1-800-877-8339
website: www.fs.usda.gov/wayne



Ailanthus seeds above;
Front cover: Dying Ailanthus trees infected with the native fungus.

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Wayne National Forest *Native Fungus vs. Non-native Invasive Tree*



Forest Service

The Scope of the Problem

Ailanthus has the potential to replace oak and other native tree species. This would have a devastating effect on many wildlife species.

- The Marietta Unit of the Wayne has been hardest hit with almost 3,000 female Ailanthus aerially mapped across 123,000 acres.
- Forested land surrounding the Wayne has also been invaded by Ailanthus. On over 78,000 acres of private lands within the Marietta Unit, 1,230 female Ailanthus were aerially mapped.
- Forest staff have treated over 1,000 acres of Ailanthus with herbicide.

What is being done?

Starting June 2015, the USDA Forest Service Northern Research Station will begin a field trial of a native fungus that kills Ailanthus. Researchers hope this fungus will prove to be a cost effective method over herbicide use.

- Research in Pennsylvania and other States has demonstrated that a native fungus, *Verticillium non-alfalfae* (Vn), shown here, is a fast-acting pathogen. This variety specifically targets Ailanthus.



- More than 71 species of native Ohio trees and shrubs have been tested for sensitivity to the fungus and only a handful have shown sensitivity. These include devils walking-stick, striped maple, and sumac. Rates of infection are very low, however. Work continues to expand testing other native plant species as well as agricultural crops.
- The fungus will be introduced on four plots within Grandview, Independence, and Newport Townships in Washington County. Two plots will not be treated with Vn to serve as controls. A total of 40 trees will be treated in the entire field trial.
- Preliminary trials have been successful at the Tar Hollow and Vinton Furnace State Forests, and no off-target effects have been observed.

The Research Study

This field trial will help assess the potential value of Vn as a non-chemical, sustainable means of controlling Ailanthus, which could help restore healthy native forests.

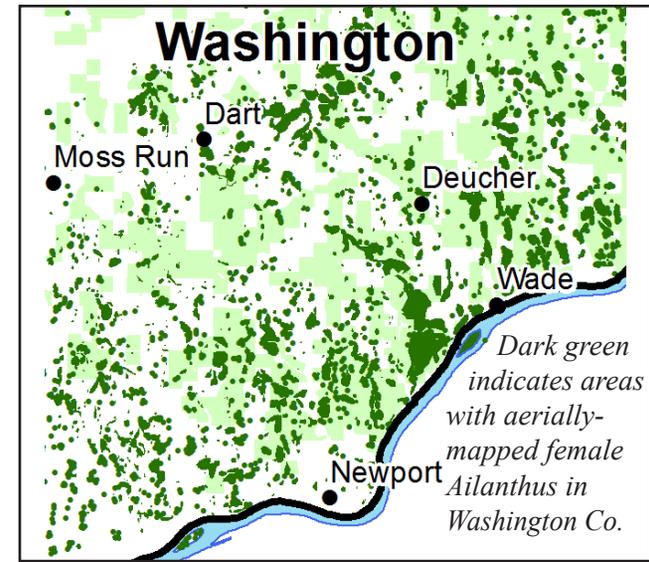
- From this field trial, scientists and managers will learn how the native forest responds to the removal of Ailanthus.
- The field test will also increase our understanding of how effectively this fungus spreads beyond the initial application site. Based on the population of the Ailanthus being treated, it is estimated the fungus could spread 200 to 400 feet per year via root transport. Rate of spread could be much less in areas where Ailanthus density is low.
- Due to the test plot locations in the interior of the Athens Ranger District - Marietta Unit and patchy nature of Ailanthus infestation in that area, it is unlikely that Vn will spread from test plots onto other parts of the Wayne or beyond.
- The lessons learned in this field trial may eventually lead to an effective management tool for forest managers dealing with Ailanthus infestations.

The Method

Using the Hack- N- Squirt method (shown below), researchers will make three cuts into the base of the tree. A small dosage of fungal spores will be applied in the cuts which is carried in water solution. Once applied, the fungus is carried into the root system, as well as to the top of the trees.



Wilting occurs in about two weeks.



Working Together

Collaboration and partnerships are important to the control of Ailanthus and will continue to be a high priority as the Forest tests Vn as a possible biological control of Ailanthus.

- The use of aerial Ailanthus inventories in 2011, provided through a partnership with Northern Research Station and the Ohio Division of Forestry enabled foresters on the Wayne to begin targeted treatment of Ailanthus in 2014.
- A partnership between National Wild Turkey Federation and the Wayne National Forest has resulted in over \$500,000 in improving and enhancing wildlife habitat. This will affect 5,500 acres of habitat on the Forest.
- Between 2014 and 2015, over 1,600 acres of Ailanthus treatment will be completed through this partnership, an investment of almost \$100,000 for chemical treatment of Ailanthus on the Wayne National Forest.