

## Invasive Exotic Plant Species: *Ailanthus (Ailanthus altissima)*

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### Background

*Ailanthus*, also known as tree-of-heaven and paradise-tree, is a major nuisance to foresters, farmers, and homeowners alike. Its prolific seeding and ability to sprout from roots and stumps and grow quite rapidly just about anywhere make it a serious competitor and threat to native species and cultivated crops. On top of that, *ailanthus* is allelopathic, producing substances that are toxic to and inhibit the growth of neighboring plants.

### Identification

**Leaves** – When present, the leaves are compound and typically measure 1 to 3 feet in total length with 11 to 25 individual leaflets.

**Twig** – Twig is smooth to fuzzy with large shield-shaped leaf scars after the leaves drop. *Ailanthus*'s most convincing identification feature is the inside of a broken twig, which smells like rancid or burnt peanut butter and even resembles it in appearance.

**Flower** – Clusters of yellow-green flowers bloom in late spring to early summer. Male flowers have a disagreeable scent, similar to that of the broken twig.

**Fruit** – Fruit is a samara, similar to the fruit found on maple trees.

**Bark** – Bark is smooth and green when young, eventually turning gray and resembling a cantaloupe.

**Form** – *Ailanthus* first grows as a single, unbranched stem or multiple stems from the ground, particularly when cut back. An *ailanthus* mono-cultural thicket will eventually result. Individual stems can grow eight feet in one year and ultimately up to 100 feet in high.



Leaf



Pith



Bark



Leaf scar

## Look-alike species

Ailanthus is often confused with native sumacs (*Rhus* spp.), but can usually be distinguished by sumac's small, red, fuzzy drupe (fruit) that persists through the winter. Black walnut (*Juglans nigra*) is also sometimes mistaken for ailanthus when young, due to its compound leaves and large shield-shaped leaf scars. Both of these features are much larger on ailanthus, and the characteristics described above should help make ailanthus less mistakable.

## Control

Ailanthus regeneration habits dictate that cutting alone will not kill the tree, but instead promote it to resprout vigorously. Cutting must be combined with chemical control unless excavating the entire root system is feasible, which usually is not. Triclopyr has been verified to provide effective control of ailanthus through basal, foliar, and cut-stump applications. The use of a surfactant for basal and foliar applications is also recommended. For a basal spray application, a 12 percent triclopyr-in-oil solution is recommended. The plant should be sprayed to the point of runoff. For foliar spray, a 2 percent triclopyr in either a water or oil solution is advised. Cut-stump treatments require a 44 percent triclopyr-in-water solution.

The following table displays many general-use chemical formulations labeled for control of ailanthus in forested setting.

Manufacturer	Product Name	Active Ingredient (ai)	Percent ai	Application Method*
Nufarm Turf and Specialty	Vanquish	Dicamba	56.8	F, C, B, S
DuPont	Krenite S	Fosamine	41.5	F, C
Dow AgroSciences	Accord Concentrate	Glyphosate	53.8	F, C
BASF	OneStep	Glyphosate + Imazapyr	69.51 + 8.36	F
BASF	Arsenal AC	Imazapyr	53.1	F, C
BASF	Chopper	Imazapyr	27.6	F, C, B
BASF	Stalker	Imazapyr	27.6	C, B
DuPont	Escort XP	Metsulfuron Methyl	60	F, S
Dow AgroSciences	Pathway	Picloram + 2,4-D	5.4 + 20.9	C
Dow AgroSciences	Pathfinder II	Triclopyr	13.6	B, C
Dow AgroSciences	Garlon 3A	Triclopyr	44.4	F, C
Dow AgroSciences	Garlon 4	Triclopyr	61.6	F, B, C
Nufarm Turf and Specialty	Tahoe 4E	Triclopyr	61.6	F, B, C

\* F: Foliar, B: Basal bark, C: Cut stump, S: Basal soil

## References

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Burch, Patrick L. and S. M. Zedaker. 2003. Removing the invasive tree *Ailanthus altissima* and restoring natural cover. *Journal of Arboriculture* 29(1): 18-24.

Disclaimer: Commercial products are named in this publication for informational purposes only. Virginia Cooperative Extension does not endorse these products and does not intend discrimination against other products which also may be suitable.

*Reviewed by Bob Smith, associate dean and professor, College of Natural Resources.*