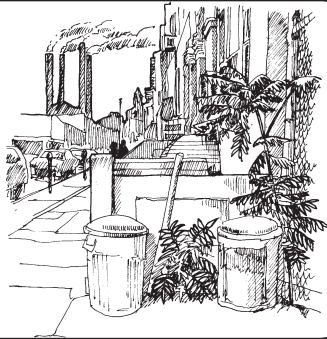


AILANTHUS Science Page

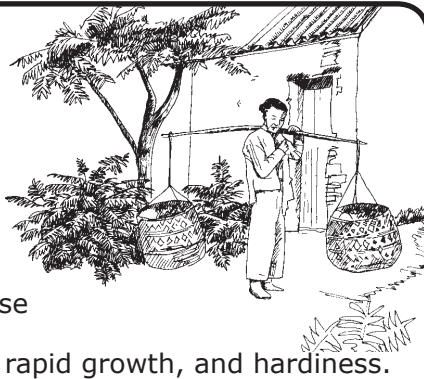
DID YOU KNOW?

Ailanthus can grow in places where almost nothing else will grow. It can even grow out of cracks in sidewalks in polluted cities.



ORIGINS

Ailanthus is a native of China. In the US, it was first planted in Philadelphia in 1784. It was a popular tree among urban gardeners because of its large, beautiful leaves, rapid growth, and hardiness. Now the plant is considered a weedy pest because it quickly takes over new areas.



THE AILANTHUS PLANT

Ailanthus trees grow rapidly, and can reach 25 meters (80 ft) or more in height.

All parts of the plant, but especially the flowers, have a strong smell.

In spring, yellow flowers appear at the tips of the branches. Male and female flowers are on different trees.



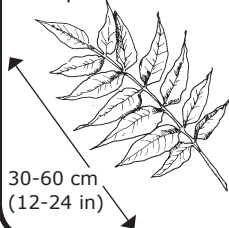
The roots exude a chemical that hinders the growth of other plants.



female flower

male flower

The leaves are large with pointed leaflets.



In summer and early fall, clusters of red fruits ripen on the female trees. One tree can produce thousands of fruits each year, which are blown by the wind to new growing places.



Each fruit has one seed.

A cluster of fruit is 15-30 cm (6-12 in) long.

CLASSIFYING AILANTHUS

FAMILY

Simaroubaceae (Quassia family)

There are about 150 members in this family. Most are tropical trees and shrubs.

The family is named after its members in the genus *Simarouba*.



Simarouba glauca
(paradise tree)



Quassia amara
(quassia tree)

The common name for the family, Quassia, comes from one of its members, the quassia tree. This tree was named after a famous healer in Surinam, who used its bark to cure fevers. All the tropical trees and shrubs in the Quassia family have bitter tasting wood. A chemical called quassiin, taken from the heartwood of some species, is used in insecticides.

GENUS

Ailanthus

There are about 10 species in this genus, all native to Asia and Australia.

A. malabarica



A. altissima

"Ailanthus" comes from the Moluccan word meaning "sky tree" or "tree of heaven." (Molucca is a language spoken on some of the islands of Indonesia.)

SPECIES

altissima

"Altissima" is Latin for "tallest." Ailanthus grows to over eight stories high.



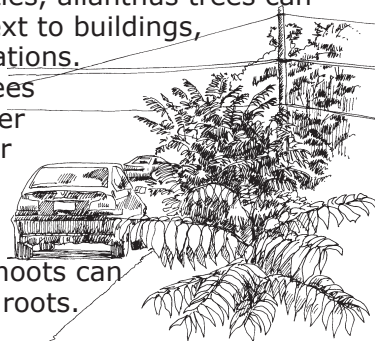
In poorer countries the wood is used for lumber and fuel. In East Asia the fruits are used in traditional medicine.



FRIEND...

...OR FOE?

In cities, ailanthus trees can sprout and grow next to buildings, and damage foundations. In woodlots, the trees can quickly take over and crowd out other species. Once it starts to grow, it is very difficult to kill, because new shoots can sprout up from the roots.





PUZZLE

Word Scramble

Ailanthus is a native of (1) NICAH. The scientific name for ailanthus is *Ailanthus* (2) *MALIASTSI*. Male and female ailanthus flowers are on (3) REPASEAT trees. The fruits of Ailanthus are one-seeded and (4) GWENID. All parts of the ailanthus tree, but especially the flowers, have a strong (5) MELLIS. Ailanthus is difficult to get rid of because new shoots can sprout from (6) TOROS.



TRY THIS

Ailanthus Survey

Do ailanthus trees grow in your neighborhood? If so, where are they growing? What are they like? Do this survey to find out.

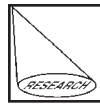
What you need

- * map of your neighborhood
- * pencil and paper
- * pictures of ailanthus for identification

What to do

1. Take a walk all around your neighborhood and look for ailanthus trees. When you find a tree, mark it on your map with a number.
2. Estimate the size (for example, seedling, small tree, medium tree, or tall tree) of the tree. Note the sex of the tree. You may be able to tell by looking at the flowers or, in the case of a female tree, by noting the presence of fruit. Note the growing conditions that are present. For example, is the tree growing in full sun or mostly in shade? What is the soil like? Note if the tree is damaging or is likely to damage building foundations or underground pipes. Make a chart with these headings to record your observations:
 - date
 - specimen number
 - size
 - sex (if female, does it have fruits?)
 - growing conditions
 - causing damage?
3. Prepare a report of your findings.

Answers to puzzle: (1) China; (2) *altissima*; (3) separate; (4) winged; (5) smell; (6) roots.



SPOTLIGHT ON RESEARCH

Mapping Ailanthus

One female ailanthus tree can produce more than 300,000 winged seeds each year. The seeds can ride the wind for great distances, and when they land, they can quickly sprout and grow into new trees. In many parts of the United States ailanthus is quickly spreading from the cities to the countryside. In some suburban areas, thick stands grow along highways, overtaking native habitats.

Scientists at the West Virginia University are trying to better understand where ailanthus has spread, and where it is likely to invade in the future. To do this, they plotted the location of all the female trees in 9 different 85-hectare plots across a typical urban-rural gradient (a straight line drawn from the city, through the suburbs, to the countryside). They used both air photos and ground surveys to find all the female trees within the 9 plots. The female trees can easily be spotted on air photos taken when the seeds ripen in mid-summer.

The scientists discovered that there are equal numbers of female trees in the urban and suburban plots. There are far fewer in the rural plots where native forests are intact. However, urban trees already occupy most of the available space where they can live, except where people continually remove saplings. Suburban trees are found at the edges of roadsides and forests, and in other places where native habitat has been disturbed. They are poised to spread into new areas in the suburbs, especially where new roads and homes are being built.

Source: Landerberger, R.E., McGraw, J.B., and Warner, T.A. [poster] (2005) Spatial patterns of female *Ailanthus altissima* across an urban-to-rural land use gradient in the mid-Atlantic region, U.S. Department of Biology and Department of Geology and Geography, West Virginia University, Morgantown, West Virginia, U.S.A.



QUOTE

"The one tree in Francie's yard was neither a pine nor a hemlock. It had pointed leaves which grew along green switches which radiated from the bough and made a tree which looked like a lot of opened up green umbrellas. Some people call it the Tree of Heaven. No matter where its seed fell, it made a tree which struggled to reach the sky. It grew in boarded-up plots and out of neglected rubbish heaps, and it was the only tree that grew out of cement. It grew lushly, but only in the tenement districts."
- from *A Tree Grows in Brooklyn* by Betty Smith
Tandem Publishing Co. Ltd, (1971) p. 5.