

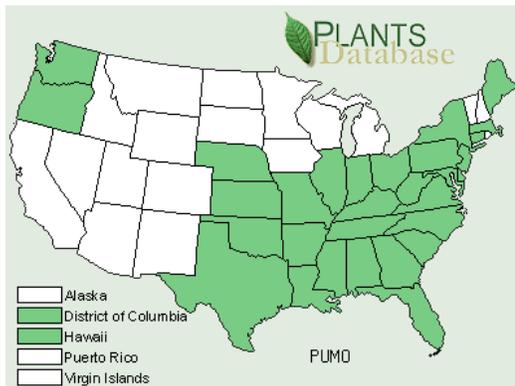


KUDZU

(*Pueraria montana* var. *lobata*)

IN BRIEF

Sometimes called “the vine that ate the South,” kudzu is a fast-growing, semi-woody, nitrogen-fixing, perennial vine in the pea family that can climb 100 feet and sprawl laterally 50 feet. It can completely cover acres of land, smothering existing vegetation.



Virginia Cooperative Extension

Kudzu climbing and smothering trees.

DESCRIPTION

Plant Habit. This many-branched vine can climb and cover tall trees, poles and even buildings. It also forms extensive mats over fields and low vegetation. Colonies expand rapidly by seed and vegetative reproduction.

Stems. Younger stems are yellow-green and covered with golden/bronze bristly hairs, while older stems are woody, hairless and gray/brown in



3-part compound leaf of kudzu. Flower spike blooms from base to tip.



Flowers are abundant in full sunlight.

Photo by Chris Parker.

color. First year vines can reach ½ inch in diameter and older stems can be 4 inches thick. Vines touching the ground will set roots at the leaf nodes, forming new plants. Kudzu can grow a foot a day.

Leaves. Each leaf, made of 3 leaflets, can be up to 8 inches long. Leaves are large, dark green, deciduous and borne alternately along the stem. The leaf stalk and undersides of leaves are hairy. Each leaflet has toothless edges and often is notched or lobed. The middle leaflet is on a short stalk and is usually 3-lobed; the outer leaflets are 1-2 lobed.

Flowers. Pea-like flowers appear on spikes (up to 8 inches long) in leaf axils, blooming from base to tip. Flowers are reddish-purple, very fragrant and appear in mid to late summer.

Seeds. Pods are hairy, flat, 1½ - 3 inches long and contain 3-10 small, kidney shaped seeds. The hard seed coat must be scratched or degraded before germination can occur. Seeds remain viable for many years.

Roots. Mature plants have a fleshy taproot that can be 7 inches wide, 6 to 12 feet deep and weigh 200-300 pounds. A single root crown can generate 30 vines, and each vine can root and establish new plants where it contacts soil.

Habitat invaded. Open, sunny locations on well-drained soils provide optimal conditions for growth and reproduction, but kudzu can also tolerate low-light conditions and poorly-drained soils. It readily invades old fields, disturbed areas, forests, streambanks and roadsides.

Reproduction. Primary means of spread are vegetative -- by underground rhizomes and above-ground vines that grow roots where they touch the soil. Seeds are dispersed by water, mammals and birds, but have a low germination rate.



Pods are hairy and contain 3-10 seeds which can remain viable for years.

Photo by Rachel Michaels.

DISTINCTIVE FEATURES

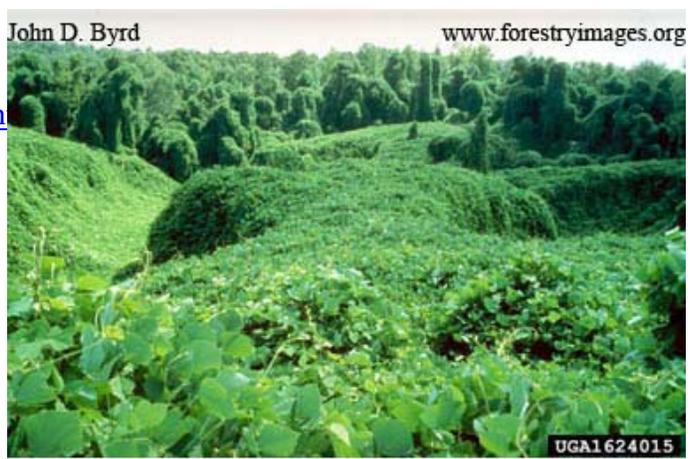
- Leaves--with three leaflets--have dense golden hairs on stems and undersides.
- Reddish-purple flower spikes have a grape-like fragrance.
- Plants form mats of leafy vines over existing vegetation.

LOOK-ALIKES

Tick-trefoils (*Desmodium* species) are native, non-woody, erect herbs (not vines) with unlobed leaflets and branched spikes of small flowers at the top of the plant. Poison ivy (*Toxicodendron radicans* and *T. rydbergii*) can be a climbing vine, but its three leaflets lack hairy stems and undersides, and its drooping white flower clusters turn into white berries. The Illinois endangered Boykin's clusterpea (*Dioclea multiflora*) is similar but leaves and pods are hairless, its flower is smaller, and the plant itself is rare.

LIFE HISTORY AND INVASIVE BEHAVIOR

Kudzu is an aggressive, nitrogen-fixing perennial vine that can climb to 100 feet, grow extremely rapidly, and sprawl 50-60 feet in all directions in a single growing season. Under harsh winter conditions, above-ground vines will die back but taproots will remain



Massive kudzu infestation covers every available surface.

healthy and capable of vigorous new growth in the spring. In more temperate regions, its woody stems remain alive year to year. Kudzu usually does not flower and fruit until its third year. Its fast growth, large leaves and tangled vines smother and shade out most other plants. Dead vines from previous years form support structures on which new vines can grow.

IMPACT ON FORESTRY AND FORESTERS

On Forestry: Kudzu climbs upon and overtops forest vegetation. It greatly reduces the amount of light, water and nutrients received by forest species, eventually smothering them. It also girdles woody stems and tree trunks. Kudzu alters forest structure and diversity through elimination of adult trees and prevention of regeneration. The accumulated weight of its vines may result in broken branches and uprooted trees and shrubs.

On Foresters: Kudzu severely restricts forest access and line-of-sight activities such as surveying. Safety of sawyers felling trees is compromised as trees fall in unpredictable directions due to constraining vines. On-the-ground processing of logs is further inhibited by the tangle of vines.

CONTROL METHODS

	Method	Timing
Manual / Mechanical	Repeated mowing or cutting of young patches	Spring, summer, fall for 3-4 years
	Prescribed burning	Spring or fall
	Grazing by livestock	Throughout growing season
Chemical	Broadcast and spot-spray foliage and root crowns (clopyralid [legume-specific], picloram, triclopyr, metsulfuron)	May - October
	Basal bark or cut stem (triclopyr or glyphosate with bark-penetrating oil)	Anytime, but avoid leaf-out period in spring.
Biological	Under evaluation.	

Control of well established colonies is challenging and can take 10 years or more. Total root eradication is needed but difficult with older stands. Strategies depend on whether the patch is in the open, draped over trees, near water, in young trees or under older trees. Patch evaluation during dormant periods is suggested to better identify major root locations, aid ease of walking, and to reveal hidden hazards such as gullies and fences.

Mechanical

Repeated mowing or cutting is slow, but can be effective on younger patches if done several times per season for 3-4 years. Defoliating the plants weakens and will eventually starve them to death. Mowing is useful as a means of reducing biomass to prepare a site for subsequent foliar herbicide spraying. Cut vines may re-root and continue to grow, so dispose of them carefully.

Grazing

Kudzu is a high-quality forage that is eagerly consumed by livestock. Close grazing at a heavy stocking rate for several years can eliminate kudzu when 80% or more of the vegetative growth is continuously consumed.

Burning

Prescribed fire can top-kill kudzu, but may not harm roots or root crowns – though it may kill seedlings. It can, however, prepare a site for later herbicide treatment by reducing biomass, revealing site hazards and facilitating the identification of root crowns for later treatment. Fire is known to stimulate germination of legumes by breaking down the hard seed coat. This may be used as a means of exhausting the seed bank as long as there is long-term commitment to monitoring and treatment. Use caution in situations where dead vines are draped over trees as there is risk of generating crown fires. Spring and fall burns can be effective in reducing biomass, while spring burns are most effective for seedling control.

Herbicide

There are several treatment methods available: foliar, basal bark, cut stem and root crown. Consult websites, local chemical dealers, extension agents, foresters and other specialists familiar with kudzu control. Root control, patch age and location, and land use are the primary considerations when selecting herbicides for a particular site. All methods require follow-up treatments and long-term monitoring to ensure that all plants are killed.

Herbicides can be broadcast or spot sprayed on foliage. Products with clopyralid are legume-specific, but other systemic herbicides can be effective. Adding a surfactant will increase absorption. Established stands can be treated by cutting stems at ground level and painting or spraying the stumps with glyphosate (20% active ingredient) or triclopyr (12.5% active ingredient) mixed with a bark penetrating oil. The un-cut bases of vines can be similarly treated. Late summer and throughout the dormant season are the best times for treatment. Large roots may become dormant for one or more years after chemicals are applied, and may eventually resprout. If treating kudzu near water or wetlands, use specially formulated products that are safe for use around water.

***NOTICE:** Use pesticides wisely. Always read the product label carefully. Follow all mixing and application instructions and wear all recommended protective gear and clothing. Contact your state department of agriculture for any pesticide use requirements, restrictions or recommendations. Many states require individuals involved in the commercial application of pesticides be certified and licensed.*

[Click here](#) for further information on the use of pesticides.

HISTORY AND LORE

Pueraria montana: *Pueraria* was named for Marc Nicolas Puerari, a 19th century Swiss botanist; *montana* means of the mountains. *Kudzu* comes from a Japanese word meaning vine. It originated in eastern Asia and was introduced as an ornamental at the 1876 U.S. Centennial Exposition in Philadelphia. Other virtues were soon discovered and by the 1920s kudzu was widely planted as a forage plant and in the 1930s was promoted for erosion control. Its invasive nature alarmed many, however, and by 1953 the USDA banned kudzu as a cover crop. Its large, starchy roots are edible and can be used as a thickener for cooking. Leaves can be eaten in a salad or cooked. Vines are used for baskets and paper-making.



In China and Japan, ground kudzu root (called kuzu) has been a common ingredient in foods. Traditional Asian healers have long valued roots and flowers for treating colds, flu, high blood pressure, chest pain, allergies and a host of other ailments. Recent research indicates that a compound in the root may also increase blood flow to the heart and brain. Kudzu can serve as an alternate host for soybean rust.

Forest Invasive Plants Resource Center - <http://www.na.fs.fed.us/spfo/invasiveplants/>

LINKS and REFERENCES

Websites

Kudzu in Alabama: History, uses, and detailed control information
<http://www.aces.edu/pubs/docs/A/ANR-0065/>

Plant Conservation Alliance – Kudzu factsheet
<http://www.nps.gov/plants/alien/fact/pumo1.htm>

Controlling Kudzu on CRP (Conservation Reserve Program) lands
<http://www.bugwood.org/crp/kudzu.html>

Mississippi State University Extension: Effective Kudzu Control
<http://msucares.com/forestry/management/kudzu.html>

Auburn University, AL: Kudzu Eradication and Management
<http://www.pfmt.org/standman/kudzu.htm>

Clemson University Extension, SC: Kudzu Eradication Guidelines
http://www.clemson.edu/extfor/vegetation_management/ec656.htm

Purdue University Extension: Kudzu in Indiana
<http://www.btny.purdue.edu/weedscience/2004/articles/Kudzu3-8-04.pdf>

National Invasive Species Information Center: Kudzu resources and links
<http://www.invasivespecies.gov/profiles/kudzu.shtml>

Southeast Exotic Pest Plant Council, with links to other invasive plant groups
<http://www.se-eppc.org/doc.cfm?id=510>

Virginia Technical University: Kudzu factsheet
http://www.ppws.vt.edu/scott/weed_id/puelo.htm

InvasiveSpecies.org: Kudzu photos and links
<http://www.invasive.org/browse/subject.cfm?sub=2425>

Books / Field guides

Invasive Plants Field & Reference Guide: An Ecological Perspective of Plant Invaders of Forests and Woodlands, by Cynthia D. Huebner, U.S. Forest Service, 2005.

(Also online -- <http://www.fs.fed.us/r9/wildlife/nnis/invasive-species-field-guide.pdf>)

Invasive Plants of the Upper Midwest: An Illustrated Guide to their Identification and Control, by Elizabeth J. Czarapata, University of Wisconsin Press, 2005.