

# KUDZU

## Annihilates Trees, Houses, and Entire Landscapes in a Single Gulp



The lumpy forms here are trees and shrubs engulfed and smothered by kudzu vines. These formations are nicknamed "kudzu sculptures" by people who are all-too familiar with them. Kudzu also covers the ground along the river.

### The Culprit

The reason kudzu (*Pueraria montana* var. *lobata*) is sometimes called "the vine that ate the South" is that it can grow as much as a foot a day during summer and 60 feet during a single growing season. Kudzu has engulfed at least 7 million acres of public and private land in the Southeast. Hailing from China and Japan, kudzu first arrived in North America in 1876 as an ornamental vine planted to cover the Japanese Pavilion at the Philadelphia Centennial Exposition. The bold-textured vine with fragrant flowers caught the public's attention and was imported to use as an ornamental cover for garden pergolas and arbors. In Japan, kudzu is used as fodder. In 1902, agricultural extension agents began recommending it to farmers in the southern US as a forage crop. The rampant vine was also planted by many states' transportation departments to control erosion along highways. Soon thereafter, kudzu began eating the South. Today, kudzu infests public and private lands from Maine to Nebraska, south to Texas and Florida, and populations have recently been found and controlled with early detection and rapid response methods in the Pacific Northwest. It has no natural predators or pests on this continent, so it grows undeterred. In 1997, the federal government listed kudzu as a noxious weed.

### Known Hangouts

Kudzu voraciously grows in pastures, agricultural and natural fields, vacant lots, power line cuts, ravines, stream sides, riverbanks, and at forest edges. Anyplace where soil is disturbed and sun is plentiful are its favorite hangouts. Kudzu climbs up power lines and telephone poles and from there

can invade lawns and yards. It even seems to mow down buildings with its rampant growth. This invasive vine enters forests at their sunny edges or in clearings and tree-fall locations. After scaling trees, it can crawl across the treetops. Its leafy, twisting tangle of growth quickly becomes impenetrable.

### Modus Operandi

Kudzu's fast-growing vines reach out across the ground and form roots at their leaf nodes. They then spread, sprawl and climb. These rooted nodes form their own crowns, which send out more vines. This is its main method of propagating itself. The vines have strong tendrils that can grab onto shrubs, slender tree trunks and branches, wires, fences and buildings.

A massive, below-ground storage tuber that is stuffed with starch gives kudzu its life force. Even after vines are cut back by livestock grazing or a machete, the tuber fuels new stems. The plant suffers no setback in its unbridled growth because grazing does not destroy the growing points on the crowns. Where winters are cold enough to kill the tops of the vine, the stored starch in the tuber fuels new growth from the crowns the next season.



Seen here leafless in early spring, kudzu vines have actually engulfed a house.

If growing in full sun, kudzu flowers in August and September. The flowers have few pollinators outside of the vine's native range, so few seeds are set. However, any viable seeds that form are long-lived. Seedpods and broken stems can float downstream in creeks and rivers to begin new populations.

Kudzu is most destructive in areas with high summer temperatures and plentiful rainfall, but it easily survives drought and cold. Vines thicker than 1/2 inch survive freezing. Slender stems die back to the crowns from cold, but crowns sprout new growth in spring.

### Positive Identification

Kudzu is a woody perennial vine in the pea family. Its large, dark green leaves have three distinct leaflets and are arranged alternately on the stems. Leaves mature at 8 to 10 inches long. The middle of the three leaflets has a short stalk and three rounded lobes. The top two leaflets have two lobes and no stalk. Leaf undersides



**Top:** A typical kudzu leaf with three-lobed leaflets **Bottom:** Kudzu flowers

are hairy. Young stems are yellow-green and covered with golden or bronze bristly hairs, which makes them glow in sunlight. Older woody stems have gray-brown bark and are hairless, to 4 inches thick. Upright flower clusters as long as 8 inches may appear in mid- to late summer. They are composed of numerous irregular-shaped, reddish-purple flowers that are typical of the pea family. The very fragrant flowers smell like ripe grapes. Seedpods, if they form, are 1 to 3 inches long, flat and hairy, and contain 3 to 10 small, kidney-bean-shaped seeds.

Kudzu's amazing growth is powered by its

fleshy, tuberous taproot, which can grow up to 7 inches wide and 6 to 12 feet long, reaching deep into the soil. Mature tubers can weigh in at 200 to 300 pounds. The growing points on the crowns along the ground-hugging stems can sprout as many as 30 branching vines. Each vine forms roots and crowns of its own where it contacts soil. If a vine is severed, these additional crowns can survive on their own – a crucial trait in kudzu's amazing survival tactics.

## Control

It cannot be overemphasized that nothing short of total eradication prevents kudzu from taking over again once it has invaded a location. Achieving total eradication takes several years of consistent monitoring and repeated treatments. Cooperation among neighbors is essential where this beastly vine crosses property lines, because it grows rampantly and respects no borders. Which control methods you choose depends partly upon the age of the infestation. Infestations four or fewer years old might be controlled by repeated grazing or mechanical methods. Herbicide is needed for infestations of 10 or more years.

**Prescribed burning:** Burning is effective only for very recent infestations, because fire does not kill large crowns and they will resprout. However, burning kills overhead vines and will thin the vegetation, making it easier to treat with herbicides.

**Grazing:** The goal is to weaken kudzu so much that it dies. Cattle, goats, sheep and pigs eat kudzu, and it is nutritious. However, grazing does not destroy the plant's crowns. Grazing works only on young infestations and when at least 80% of the foliage is continually removed from late summer through fall. Grazing needs to be carried out for at least three or four years to exhaust all tuber nutrients. After several years of grazing, spot treatments with herbicide will kill remaining live growth.

**Mechanical Removal:** Instead of grazing, mechanical cutting with machetes or mowers is sometime feasible. Repeat weekly throughout the growing season for three to four years to exhaust the tubers. Mowing does not destroy the crowns, which will resprout. *If you can sever crowns from both the vines that sprout from the crowns and tubers beneath the crowns, then you will effectively kill kudzu.* This is much easier said than done. In older infestations, it is difficult to find all the crowns hidden in the immense tangle of vines.

To find a root crown, follow a vine to where it roots in the soil. Dig around that spot and look for a woody knob or ball near the soil surface. If it has several buds, new sprouts, and/or mature vines emerging from it, this structure is a crown. Use a saw or mattock to cut just below and above each and every crown. Remove the severed crowns from the site. Kudzu cannot regrow from roots or tubers that originate below a crown, and it does not sprout from lateral roots, but crowns left in place can re-root. Sometimes vining stems, which do form roots, may be buried under leaf litter. These stems resemble lateral roots, but are able to grow roots and crowns and that continue the infestation.

**Cut Stump:** If it is possible to cut the tangle of vines back to its crowns, instead of severing the crown from the tuber, you can apply concentrated herbicide to the cut stumps. Use a recommended herbicide at full strength. Be sure to reveal and treat every crown. Cut stumping is best in late summer or early fall.



**Shown here:** The root crown of a young kudzu plant (on left side of the photo) has been chopped from the underground storage tuber. All vining stems have been cut from the crown.

**Foliar Spray:** Foliar herbicide sprays must be applied twice a year. Apply the first spray in late spring or early summer after leaves mature. Thoroughly wet the foliage as high as possible on climbing vines. This kills the spring growth. In late summer or early fall, spray the foliage that emerged after the first treatment. Repeat this for several years until no new growth appears. A higher concentration of herbicide commonly used to control most plants is needed for kudzu. Add surfactant if one is not in the product you use.

In forests and fields away from residential areas, use a pea-family-specific herbicide. This herbicide can injure trees in the pea family, such as redbud and black locust, and also harms plants in the daisy-family, but leaves most other plants unscathed. It is the preferred treatment where non-specific herbicides could harm nearby, high-value plants. After foliar treatment, kudzu may remain dormant for several years, then regrow into a monster seemingly overnight.

Restore long-established kudzu infestations after eradication with native grasses and wildflowers.

For currently approved herbicide recommendations, check the Virginia Department of Forestry chart *Non-Native Invasive Plant Species Control Treatments*, which you can download from the Blue Ridge PRISM website.