

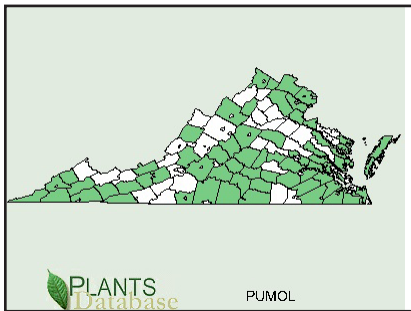
You Ain't From Around Here: Exotic Invasive of the Quarter: Kudzu (*Pueraria montana* (Lour.) Merr. var. *lobata* (Willd.) Maesen & S.M. Almeida

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I will be featuring an invasive species in each newsletter. This section will provide resources to help you identify and control these plants, diseases and insects, hopefully before they become a problem!

Exotic invasives are non-native plants, diseases and insects that are able to thrive and spread aggressively outside their natural range. When spread is extensive, they can alter ecosystem function by replacing native species, changing forest structure, decreasing forest productivity and biodiversity. Some key characteristics include: prolific seeding or reproduction, efficient dissemination, adaptability to different environments, rapid growth, and lack of natural controls. Landowners can help stop invasives before they get out of control by 1. inspecting their property regularly, 2. maintaining a healthy forest with minimal disturbance, 3. treating invasives as soon as they are detected and 4. rehabilitating sites after eradication.

As you drive south along I-81 in far SW Virginia, the roadside becomes noticeably greener...you look closer, it's a vine, it's growing so fast you can see it move, it's...it's ...why, it's...KUDZU!



Range map of kudzu in Virginia (green areas have kudzu). Map: <http://plants.usda.gov>.

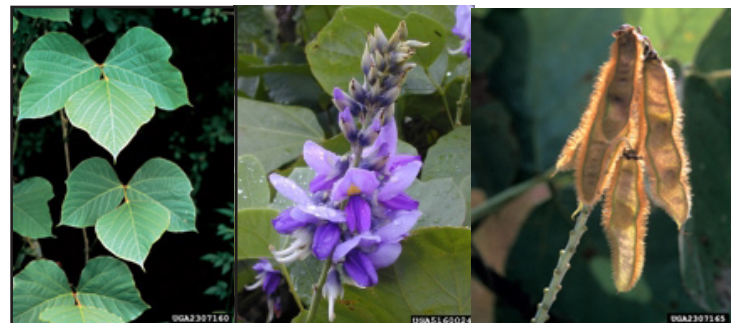
Back in 1876, the folks at the Philadelphia Centennial Exposition introduced this vine from China and Japan as a solution to control erosion, a tasty treat for livestock, and a charming item for folk crafts. In the early 1930's the Soil Erosion Service paid southern farmers \$8 an acre to grow it – resulting in 1.2 million planted acres. However, by 1953, the kudzu invasion was on the move and the USDA took kudzu off of the list of recommended cover plants. In 1970 kudzu was listed as a common weed, and in 1998 it was listed as a Federal Noxious Weed. Today, somewhere between two and seven million acres in the southeastern United States are covered by kudzu. Vines can grow up to 60' in a single growing season and up to a foot in a single day! One study estimated that if left uncontrolled, one acre of kudzu would grow to cover 5,250 acres in 100 years. Yikes!

Kudzu is in the pea family and is related to the soybean (a high value agricultural crop). It is a legume (a plant that can fix its own nitrogen in the soil from atmospheric nitrogen) which allows adaptation to many different soil types. Although kudzu does well in most southern climates, it thrives in areas with mild winters, summer temperatures around 80°F, and annual rainfall greater than 40". Temperatures below -25°F are lethal for the roots (unfortunately, in the South, we don't get quite that cold!). This vine grows on sites receiving full sunlight – generally in disturbed areas, along roadsides, fields and forest edges. It can climb tall buildings, mature trees and utility poles. The dense mat-like growth covers and suffocates plant life, and can be so heavy it breaks utility poles, uproots trees and crushes buildings. Can anyone stop this mad vine from taking over the South? Yes - you can - with diligence, perseverance, and perhaps some chemicals.

How to identify kudzu

Leaves: Deciduous, alternate, compound with three leaflets per leaf; leaflets up to 4" across and 3-7" long; dark-green, hairy with pointed tips; borne on long leaf stalks. Can resemble poison ivy, but much hairier (and not poisonous).

Flowers: Flowering begins three years after establishment; blooms June-September; flowers in long hanging clusters 2-12" long; deep-purple or red-purple with yellow patch on largest petal; pea-like; smell like grape Kool-Aid; mainly found on upright



Kudzu leaves (a), flowers (b) and seedpods (c). Photo credits (a & c) Ted Bodner, Southern Weed Science Society and (b) Forest & Kim Starr, USGS.

climbing vines.

Fruits/seeds: Seeds mature September-January; clustered (20-30 pods), green ripening to brown, hairy, 1-2" long; 3-10 hard kidney-shaped seeds per pod; viable seeds rarely produced in United States.

Stems: Yellow-green, round, golden hairs, mature bark is rough, rigid and dark-brown.

Habit: High-climbing perennial semi-woody vine, 35-100' long; roots tuberous and fleshy; rooting depth can be up to 16'; most reproduction occurs via tuberous roots (stolons) and root nodes (wherever a vine touches the ground it can take root – in fact, up to 30 vines can grow from a single root node); spreads into waste areas, fields, forest edges, and climbs trees and buildings.

How to Control Kudzu

Regularly monitor your property for this vine! It only takes one plant to start an invasion. As soon as you spot kudzu, take action to eradicate it.

Mechanical: Kudzu vines can be cut just above ground level; the cut material needs to be removed from the site – burn it, feed it to livestock, or bag up in black trash bags. Repeated cuttings will be necessary to deplete the root's carbohydrate supply – early in the growing season, cut every two weeks; as the summer progresses, this interval can be lengthened. Cutting may need to continue for two complete growing seasons to fully eradicate kudzu.

Burning is another option. Since kudzu vines and leaves contain high amounts of water, they won't burn well, unless flaming is first used to kill and dry out the leaves. Flaming involves using a kerosene torch to wilt leaves (flaming can be used alone but will need to be repeated similar to cutting, if not followed by burning).

A more labor intensive, and somewhat destructive option, is grubbing. This involves mechanical removal and destruction of the plant material, including removal of the root crowns. The plant material can be fed to cattle. However, this option can lead to high amounts of site disturbance and may need to be repeated for two growing seasons.

Chemical: Several different herbicides effectively kill kudzu. In all cases, leaves need to be thoroughly wetted with herbicide mixed with a surfactant and water between July and October – for two consecutive growing seasons.

Tordon K – a 2% solution (8 oz per 3 gallons water/surfactant mix) broadcast or spot applied; will kill non-target plants as well and will need rain within six days of application for soil activation.

Escort – 3-4 oz per acre (0.8-1.2 dry oz per 3 gallons water/surfactant mix)

Transline – 0.5% solution (2 oz per 3 gallons water/surfactant mix)

If you are concerned about killing non-target vegetation, a growing season application of 2% Garlon 4 solution (or other glyphosate based herbicide) (8 oz per 3 gallons water) can provide partial control of kudzu.

Biological: Both native and non-native biocontrol agents have been identified. These include leaf-feeding beetles, sawflies, weevils, beetles and fungal pathogens. Research is still being conducted on these agents to determine if they pose a danger to important agricultural crops (such as soybean). No biocontrol agents are currently commercially available.

Unfortunately, this is one Chinese import that can't be recalled.

References/Sources of Additional Information

- Britton, K.O., D. Orr, and J. Sun. 2003. Kudzu. In: *Biological Control of Invasive Plants in the Eastern United States*. (R. Van Driesche et al.). USDA Forest Service Publication FHTET-2002-04. 413 p. Website: http://www.na.fs.fed.us/fhp/invasive_plants
- Miller, J.H. 2003. *Nonnative invasive plants of southern forests: A field guide for identification and control*. Revised. Gen. Tech. Rep. SRS-62. Asheville, NC: USDA Forest Service, Southern Research Station. 93 p.
- Missouri Department of Conservation. 2007. *Vegetation Management Guidelines*.



Regularly monitor your property for signs of kudzu - or this could be your yard! Photo by: Jerry Asher, USDI Bureau of Land Management.

- **USDI National Park Service. Integrated Pest Management Manual.**
<http://www.nature.nps.gov/biology/ipm/manual/exweeds1.cfm>