



Maryland DNR Forest Service  
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# Forest Pests

## Invasive Plants and Insects of Maryland

Invasive plants and insects can be problematic for forest landowners. From vines that take over disturbed areas, forest edges, and tree canopies to insects that defoliate and girdle trees, these pests not only decimate the natural ecosystem, they are difficult to control and can be expensive to eradicate. This informational sheet discusses the vine commonly known as kudzu.

### Kudzu (*Pueraria* spp.)



Forest & Kim Starr, Starr Environmental, Bugwood.org

#### DESCRIPTION

Kudzu is an exotic perennial vine from the Pea (*Fabaceae*) family. The common name kudzu refers to several variations of the vine from across the southern U.S. that can breed together. The variation most commonly found in Maryland is *Pueraria montana* (Lour.)

Merr. var. *lobata* (Willd.) Maesen & S. Almeida. Kudzu vine has deciduous, alternating, compound leaves, with three broad leaflets that may or may not be deeply lobed. It is a semi-woody climbing vine that can grow 7-12 inches per day and can quickly colonize recently disturbed areas, roadsides, and forest edges.

Flowers form on vines that are 3 years and older. The vine does produce seeds, but the majority of seeds are not viable. Viable seeds in the soil can germinate for several years. Kudzu primarily propagates by sprouting roots at the nodes of the vine when it comes in contact with the soil. As a result, roots systems are very extensive and can reach a soil depth of 3 to 9 feet.

## **ORIGIN & SPREAD**

Kudzu was first seen in the U.S. at the 1876 Philadelphia Centennial Exposition. At the turn of the century, farmers could mail-order kudzu and would plant it as a forage crop. In the 1930's kudzu was distributed as a cover crop to reduce erosion on farms, and the Civilian Conservation Corps used the plant for some of its projects. After it started to spread out of control, the USDA recognized it as a pest weed in 1953. Currently, kudzu has been found in over 30 states, concentrated in the Southeast.

Once established, kudzu moves quickly across open areas. The vine grows over natural vegetation and will climb trees along the forest edge. It creates a dense blanket of vines that blocks sunlight and can girdle or topple over trees. Kudzu alters the native ecosystem and changes the food source and habitat for wildlife. Because of its rapid spread, early detection of the vine is critical.

## **CONTROL OPTIONS**

### ***Hand Control***

Once established, control of kudzu is a long-term intensive process. There are manual, mechanical, and chemical methods of addressing infestations, but usually some combination of the three is most effective. If detected early, hand pulling and grubbing the vine and roots can be effective over the course of a few years. It is very difficult to remove all of the roots.



*Kenny Britton, USDA Forest Service, Bugwood.org*

Remaining roots will continue to sprout throughout the season and repeated pulling and grubbing will eventually exhaust the stored energy in the roots and the vine will die. Other methods, such as repeated mowing or heavy grazing by livestock, can produce similar results over time.

### ***Equipment & Herbicide Control***

Larger infestations will usually require the use of herbicides or, in some cases, heavy equipment. Equipment like bulldozers, backhoes, or brush hogs can be very effective at removing the vines and roots. However, re-establishment can occur from seed germination or any missed vine pieces left in the dirt. If the equipment is not completely cleaned on site, spread of the vine can occur when the equipment is transported. Many

other mechanical methods have been attempted and there are non-profit groups, such as The Coalition to Control Kudzu Without Herbicides (2010), who experiment with control methods and chronicle the results.

Kudzu is most often controlled by herbicides. In recent years, research into controlling kudzu has expanded and there are new ways of controlling kudzu being developed. Table 1 shows some of the suggested uses of herbicides as found in Miller, Manning, and Enloe (2010), Swearingen et al (2010), and the SE-EPPC Invasive Plant Manual (2003). The most commonly used herbicides for controlling kudzu include glyphosate (e.g. Accord<sup>®</sup> XRT), triclopyr (e.g. Garlon<sup>®</sup> 4), and picloram (e.g. Tordon<sup>®</sup> 101). There are several ways to apply herbicides to kudzu, but generally, the following three methods are followed.

### **Cut Stem Method**

Simply cut the vines at ground level and apply the herbicide directly to the vine. This is generally done with a paint brush or plastic spray bottle. Once applied, the herbicide is absorbed throughout the root system. This method is preferred when the infestation is surrounded by other desirable species.



*James H. Miller, USDA Forest Service, Bugwood.org*

### **Foliar Spray Method**

This method is common for very large infestations where there are no other desirable species. Generally, an herbicide solution is sprayed on the foliage just enough to wet it, not drip. The herbicide is absorbed through the leaves and is carried to the root system.

### **Root Crown Method**

Sometimes applying herbicide directly to the root system is effective. Follow the stem of the vine to the roots and find the root crown (Pictured right). Cut into the root crown and apply the herbicide solution.



*Louis W. Adams, Jr. The Coalition to Control Kudzu Without Herbicides*

### **SUMMARY**

When dealing with kudzu, it is important to remember that these applications will not completely control the infestation on the first attempt. Several attempts may be needed over several years. Seeds remain viable in the soils for several years and pieces of vines or roots may take hold and begin to grow vines again.

Use pesticides wisely. The information in this sheet is intended to illustrate methods that are currently being practiced and does not endorse or promote any of the herbicide products listed. Please be sure to read herbicide labels, even if you have experience with

the herbicide, as labels are updated frequently. All information in this sheet is based on the information of the herbicide labels at the time of printing. Please contact the Maryland Department of Agriculture (MDA) if you have any questions about pesticides. The MDA website ([www.mda.md.state.us/plants-pests](http://www.mda.md.state.us/plants-pests)) contains a searchable pesticide database where you can search for pesticides, applicators, dealers, and businesses

**Table 1. Herbicide Suggestions for Controlling Kudzu Infestations.**

<b>Application Method</b>	<b>Active Ingredient</b>	<b>Brand Name</b>	<b>Percent Solution</b>	<b>Time of Year</b>
Cut Stem	Glyphosate	Accord <sup>®</sup> XRT	25% in water	Air above 45°F
Cut Stem	Glyphosate	Roundup Pro <sup>®</sup>	Undiluted	Year – round
Cut Stem	Triclopyr	Garlon <sup>®</sup> 4	25% in water	Air above 45°F
Cut Stem	Triclopyr	Brush-B-Gone <sup>®</sup>	Undiluted	Year – round
Cut Stem	Triclopyr	Brush Killer <sup>®</sup>	Undiluted	Year – round
Cut Stem	Triclopyr	Vine X <sup>®</sup>	Undiluted	Year – round
Cut Stem	Picloram & 2,4-D	Pathway <sup>®</sup>	Undiluted	Year – round
Foliar Spray	Triclopyr	Garlon <sup>®</sup> 4	2% in water and surfactant	Air above 65°F
Foliar Spray	Triclopyr	Garlon <sup>®</sup> 4	3-5% in water and surfactant	If previous applications are ineffective
Foliar Spray	Picloram	Tordon <sup>®</sup> K	2% in water and surfactant	June to October
Foliar Spray	Picloram	Tordon <sup>®</sup> 101	3% in water and surfactant	June to October
Foliar Spray	Metsulfuron	Escort <sup>®</sup> XP	3-4 oz per acre	July to early September
Foliar Spray	Aminopyralid	Milestone <sup>®</sup> VM	7 oz per acre	July to early September
Foliar Spray	Clopyralid	Transline <sup>®</sup>	0.5% in water	Year – round
Root Crown	Glyphosate	Accord <sup>®</sup> XRT	50% in water	Air above 45°F
Root Crown	Triclopyr	Garlon <sup>®</sup> 4	50% in water	Air above 45°F

## REFERENCES

Coalition to Control Kudzu Without Herbicides. 2010.

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