

Controlling Kudzu in CRP Stands

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Introduction

Introduced to the United States at the turn of the century from Japan, kudzu, *Pueraria lobata*, was extensively planted throughout much of the southeast as an ornamental plant, for a forage crop, and most importantly for erosion control. Kudzu's rapid growth of up to several feet a day, made it ideal for stabilizing ditches, gullies and steep slopes. Once widely promoted, kudzu can be a serious pest of CRP pines and control is difficult and expensive.

Plant Description

Kudzu is a perennial, leguminous vine. It is deciduous, losing its leaves in the fall following a killing frost. Fragrant purple flowers form in late June to early July on vines draped three feet or higher into trees, fences and other objects. Flowers are rarely produced in open patches on flat ground. The hard-coated seeds can remain viable for several years before they germinate. Burning scarifies the hard seed coat permitting germination.

Vines grow from buds on a root crown at the soil surface. As the vines spread, rooting occurs from buds at each node on a vine. With vine growth of up to 50 feet in a single growing season, a single plant can spread to cover large areas each year. Roots developing from the vine nodes usually enlarge into root crowns from which additional vines will arise. Mature stands of kudzu may have root crowns every 1 to 2 square feet.

Roots of the established crowns can reach several inches in diameter and may grow to depths of three feet. They have a high starch content that supports early spring growth and regrowth if vines are damaged by mowing or grazing in the summer. The fleshy, starch-rich roots make control difficult because this stored food reserve supports regrowth. To completely eradicate kudzu, it can take three to ten years of repeated treatments to deplete root reserves.

Control Strategies

Most kudzu infestations in CRP pines originate from old, well-established root stocks at field edges, and/or in older stands next to fields. Annual cultivation once kept vines from running into the fields. Once trees were established, runner vines can invade the young pine stands. So control is

necessary, not only in the young pines, but in the adjacent field borders as well.

With a large root system packed with starch and aggressive growth habit, eradication of kudzu requires persistent treatment. Several strategies can be employed to eradicate kudzu, including herbicides, prescribed burning, mowing, and livestock grazing. When selecting control strategy consider restraints which may prevent broadcast applications of herbicides, use of tractors to spray, or mow, and the presence of desirable vegetation in the patch. Because kudzu can reach depths of four feet or greater, the thick mat of vines and leaves can hide gullies, ditches, logs, wells and other hazards. Carefully check the site after a prescribed burn, or in winter or early spring when the leaves have fallen to determine if obstacles to application exist.

Mowing - Repeated mowing can weaken and ultimately control kudzu. Mowing is generally a good first step towards control, provided it can be done without risk to the tractor operator. Close mowing reduces the tangle of leaves and vines and treatment of regrowth is much easier accomplished. Thick mats of vines are often difficult to mow with light-duty rotary mowers. Flail mowers with horizontal blades cutting in a chopping action may operate more effectively.

Grazing - Using kudzu as a forage for cattle and other livestock was an early promotion with its introduction into the U.S. Kudzu hay has excellent nutritional value and is palatable to livestock. To control kudzu by grazing it is necessary to adequately fence the entire patch and to provide sufficient additional grazing areas on which to rotate livestock as the kudzu is grazed down. Only by repeatedly grazing the regrowth over successive growing seasons will the root reserves of starch be depleted.

Burning - Prescribed fire can be used to consume vines and leaves to permit inspection of the site and to determine the size and density of the kudzu root crowns. Burning should be done in the winter or early spring. Using spring burns limits exposure of bare soil to winter rains minimizing soil erosion on steep slopes. Prescribed burning is useful in promoting seed germination prior to a herbicide treatment.

Herbicides - Application of herbicides is a common and expensive option to control kudzu. Several herbicides are labeled for kudzu control (Table 1). Their use requires careful site evaluation and prescription in accordance to the information contained on the manufacturers pesticide label. Herbicides can be used in combination with other treatments such as prescribed fire, mowing, or following grazing which reduces the lush vegetation and allows easier application to somewhat weakened plants.

Summary

PERSISTENCE!! - Each individual crown must be controlled in a patch, otherwise the rapid spread from even a single crown will negate all prior eradication efforts. All of the herbicide treatments listed above require follow up spot treatments for several years after initial application to

completely eradicate kudzu.

Table 1. Herbicides for kudzu control.

Situation	Herbicide Formulation	Application Rate	Remarks and Precautions
Young Pine Stands	Metsulfuron methyl (Escort)	4 oz. per acre	May be applied over-the-top of pines which have been established for at least one year in the field. Use 30 gal. of water per acre and add a non-ionic surfactant to insure thorough wetting. Make application after full leaf expansion through September. Retreat with broadcast or spot treatments in subsequent years as needed.
	Metsulfuron methyl (Escort) + Imazapyr (Arsenal)	1 to 2 oz. per acre + 10 to 16 oz. per acre	For treatment of one-year-old pines, use the 1 to 2 oz. rate of Escort + 10 oz. of Arsenal. Add a non-ionic surfactant (0.25%v/v). Apply in mid summer directing spray away from pine foliage when possible. For treatment of 2- to 4-year-old pines, use the 1 to 2 oz. rate of Escort + 16 oz. of Arsenal. Add a non-ionic surfactant ¼ to ½ percent in solution). Apply in early to midsummer directing spray away from pine foliage when possible. Some stunting of pine growth may occur with these treatments.
	Clopyralid (Transline)	21 oz. per acre	For use in spot applications in forestry on sites adjacent to right-of-ways or industrial areas. Add nonionic surfactant (¼ to ½ in solution). Apply in early to midsummer before kudzu blooms, and apply in at least 100 gallons of water per acre to insure thorough coverage. Backpack application: mix 4 oz. of Transline + 4 oz. of a

			nonionic surfactant in 4 gal. of water.
Older Pine Stands	Triclopyr (Garlon 4) + Diesel fuel or Basal Oil	4 percent Garlon 4 in diesel fuel or basal oil	Spray on kudzu vines that are running up tree trunks or hanging from limbs. Apply in winter to early spring before kudzu growth begins. Pine trees 6 inches in diameter breast height should not be injured if mixture is sprayed on the bark. Do not spray into the foliage or smaller branches of pines. Hardwood stems are susceptible to this mixture.
	Clopyralid (Transline)	21 oz. per acre + 1 qt. per acre	If damage to adjacent trees and other woody plants can be tolerated, 1 qt. of Garlon 4 can be added to the 21 oz./ac rate of Transline in 100 gal. of water to improve long term control. Backpack application: 4 oz. Transline + 4 oz. Garlon 4 + 4 oz. of a nonionic surfactant in 4 gal. of water.
	Metsulfuron methyl (Escort) + Glyphosate (Accord)	3 oz. per acre + 2 qts. per acre	Apply to kudzu growing in understory. Use a non-ionic surfactant, wait until full leaf development by kudzu, apply through September. Direct spray away from pine foliage. Some stunting of pine growth may occur.
Streamsides, gullies, sensitive areas	Dicamba + 2,4-D (Banvel 720)	2-3 gals. per acre	Do not spray herbicide directly into water or allow runoff to contaminate surface water. Do not apply in the root zone of desirable plants. Apply in August and September.
Open areas	Picloram (Tordon 101 M)	1-2 gals. per acre	Broadcast herbicide in sufficient water to thoroughly wet the kudzu mat. Apply in late May to September.
	Picloram (Tordon K)	0.5-1 gal. per acre	Broadcast herbicide in sufficient water to thoroughly wet the kudzu mat. Apply in

late May to September.

ATTENTION! PESTICIDE PRECAUTIONS

1. Observe all directions, restrictions and precautions on pesticide labels. It is dangerous, wasteful and illegal to do otherwise.
2. Store all pesticides in original containers with labels intact and behind locked doors. "KEEP PESTICIDES OUT OF THE REACH OF CHILDREN."
3. Use pesticides at correct label dosages and intervals to avoid illegal residues or injury to plants and animals.
4. Apply pesticides carefully to avoid drift or contamination of non-target areas.
5. Surplus pesticides and containers should be disposed of in accordance with label instructions so that contamination of water and other hazards will not result.
6. Follow directions on the pesticide label regarding restrictions as required by State and Federal Laws and Regulations.
7. Avoid any action that may threaten an Endangered species or its habitat. Your county extension agent can inform you of Endangered Species in your area, help you identify them, and through the Fish and Wildlife Service Field Office identify actions that may threaten Endangered Species or their habitat.



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