



# Poison Ivy and Poison Oak

## *Biology, Toxicity and Management*

R. H. Callihan, Extension Weed Specialist

Poison ivy (*Rhus radicans* L.), a member of the cashew, or sumac family (Anacardiaceae), is common in Idaho. Its close relative, poison oak (*Rhus diversiloba* T. & G.), is less common in this state. Both are native to this area. They are so similar in their general appearance, growth habits, effects on humans and responses to controls that common names of the species are used interchangeably. Either species may be called poison ivy or poison oak.

These poisonous plants are found in fencerows, waste areas, open woods, hill pastures, cut-over forest lands, stream banks and rocky canyons in most Idaho counties. Each autumn their brilliant red foliage attracts uninformed people who gather them for house decoration, and who then often suffer poisoning and may require hospitalization. Poisonings are not limited to autumn, however. Swimmers, boaters, fishermen, recreational hikers and picnickers are most frequently exposed to and poisoned by these plants. These two plant species substantially limit the use and enjoyment of our natural environments.

### Description

Poison ivy and poison oak normally grow as shrubs from 3 to 10 feet tall, but they also grow as woody

vines that twine around trees and larger shrubs. They reproduce both by seed and by lateral underground rootstocks. The vine develops rootlets on the stems, enabling the vines to adhere to the trunks of trees and other surfaces. Poison ivy and poison oak are readily identified by their leaves. Leaflets are from ½ to nearly 2 inches long. They grow in groups of three on a common petiole (Fig. 1) and resemble oak or ivy leaves. The tips of poison ivy leaflets are acutely pointed, while poison oak leaflets are more rounded. The leaf surface is glossy and may have a blistered appearance. Flowers are greenish-white, about ¼ inch across, and are borne in clusters on a slender stem. The fruits are white, berry-like, glossy and dry when ripe, with a striped stone inside the papery shell. The berries of poison ivy are about 1/6 inch in diameter whereas those of poison oak are about 1/5 inch in diameter (Fig. 2).

### Value and Use

Poison ivy and poison oak are eaten by goats and sheep as well as deer and other wildlife. Livestock and wildlife do not appear to be sensitive to the poison. Root systems of these plants can retard soil erosion. These values are not generally considered to be significant virtues, however, since many nonpoisonous and desirable



Fig. 1. Poison ivy is commonly found in rocky canyons.



Fig. 2. Each poison ivy leaf has three leaflets. Berries are about 1/6 inch in diameter.

plant species, both native and introduced, provide equal or better animal forage and erosion control. The colorful autumn foliage adds to the scenic beauty of the countryside, but is a deceptively sinister attraction.

## Poisoning

**Caution:** If you know or suspect that you are susceptible and you intend to work near poison ivy or poison oak, avoid both direct and indirect contact with the plants. Wear rubber gloves and other protective clothing.

All parts of poison ivy and poison oak plants contain an extremely poisonous oily substance (urushiol) during the entire year. This toxin causes painful irritation and blistering of the skin, starting several hours or days after contact. Poison ivy dermatitis is apparently an anaphylactic reaction: that is, it only occurs after sensitization by previous exposure. Human reactions vary from extreme susceptibility to near immunity. Many people are immune when young but become suddenly or gradually sensitive with age, possibly due to sensitization through repeated exposure. A few cases have been reported in which the poison affected such large areas of the body, or was so severe internally, that death resulted. Such cases are rare, but doctors should be consulted in all extreme cases.

To cause poisoning, the oil usually must come in contact with an individual's skin, either directly by touching the plant or indirectly by touching gloves, other clothing, tools, livestock, water or firewood that has touched the plant. The toxin may move systemically within the body after it penetrates the skin. As little as one microgram (three thousandths of 1 ounce) has caused severe blistering in susceptible individuals.

Smoke from fires burning poison ivy and poison oak has been known to poison persons who are otherwise immune. Inhalation of such smoke results in lung poisoning that can require hospitalization and intensive care.

Individuals who are exposed to poison ivy or poison oak should thoroughly wash the exposed skin with strong alkaline soap and hot water followed with rubbing alcohol or a solution of water and alcohol in equal proportions to dissolve the unabsorbed poison. This solution must be used liberally to remove the poison, because the solution only flushes away the poison, it does not inactivate it. Contaminated clothing and bedding can carry the poisonous oil for years. If poisoning occurs even after washing, dry cleaning may be necessary. Medications for relieving the discomfort caused by poisons are available.

## Control Methods

### Mechanical/Cultural Methods

Poison ivy or poison oak will not survive repeated cultivation, as is done in an annually tilled crop. A consistent program of timely hoeing or other mechanical tillage can destroy growing plants after a year or two.

## Biological Control

Though some animals graze poison ivy and poison oak and may limit abundance of those plants, grazing will not eliminate the weeds or stop their spread unless it continues intensively for several years.

**Caution:** Poisonous oils may be transferred from animals grazing in or moving through poison ivy or poison oak to people who handle those animals.

## Chemical Control

Tables 1 and 2 list herbicides that may be used to kill poison ivy and poison oak. Table 1 lists those marketed for large infestations, and Table 2 lists those packaged for use on a few plants or very small infestations around yards and gardens. All are safe when used according to label directions. A small number of people may be allergic to the solvents, surfactants or even the active ingredients in these herbicides, however, so people with known allergies to such things should avoid exposure to them during application.

These herbicides are permitted for use only as specified on the label. Use of a herbicide for a weed not specified on the label is at the risk of the user. If a label lists either poison ivy or poison oak among the weeds the herbicide controls, without identifying a scientific name, the herbicide can be used on both.

## Foliage Sprays

Several commonly used brush killers control poison ivy or poison oak (Tables 1 and 2). Foliage spraying should be done in the late spring or early summer (June in most areas) after poison ivy or poison oak are in full leaf. New growth and missed plants should be resprayed the same year. Herbicides may drift if sprayed during breezy conditions and must be applied carefully in areas where susceptible plants are growing. Consult the label for restrictions and limitations to use.

**Selective herbicides** — Selective brush killers will destroy the weeds without destroying grass. Picloram is one of the more effective herbicides for controlling poison ivy and poison oak on non-crop or grazing land. It is a restricted-use herbicide, not because of hazard to humans but because it can harm sensitive non-target plants. Applying a restricted-use herbicide requires a special license. Picloram cannot be used on homesites, stream banks, in water or where it may contact sensitive non-target plants. The recommended rate is 1 to 1½ pounds of picloram per acre. This is usually applied in about 100 gallons of water per acre to wet all target foliage after the plants are fully leafed. One treatment is usually effective, but some regrowth will likely occur and should be resprayed within 3 weeks of its appearance.

Dicamba, triclopyr, 2,4-D and commercially prepared mixtures of 2,4-D with MCPP or with MCPP plus dicamba may be used selectively without damaging grasses. These may also damage sensitive non-target species, so care in applying them is important. Since

**Table 1. Herbicides that may be used on poison ivy and poison oak (available in large containers from agricultural suppliers).**

Herbicide					
Active ingredient common name	Commercial product trade name	Type of application	Dosage of commercial product (oz/acre)	Type of registration <sup>1</sup>	
				<i>Rhus radicans</i> (Poison ivy)	<i>Rhus diversiloba</i> (Poison oak)
glyphosate	Accord <sup>1</sup>	foliar	*(f) <sup>3</sup>	R <sup>4</sup>	R
glyphosate	Roundup	foliar	128 to 160 (f)	R	R
glyphosate	Rodeo	foliar	96 to 120 (f)	R	R
Amitrol	Amitrol-T	foliar	112 (d)	R	N.S.
Amitrol	Amizol <sup>2</sup>	foliar	32 (d)	R	R
	Arsenal	soil, foliar	48 to 64 (f)	R	-
dicamba	Banvel	foliar, basal	128 to 256 (f)	R	N.S.
2,4-D	Weedone CB	foliar, basal	128 to 640 (f)	R	R
2,4-D	Dacamine 4D	foliar	*	R	N.S.
2,4-D	Formula 40	foliar	*	U	U
2,4-D	Esteron 99		*	U	U
2,4-D	Weedone 638		*	U	U
2,4-D	various others		*		
sulfometuron	Oust	soil, foliar	6 to 12 (d)	R	N.S.
tebuthiuron	Spike DF <sup>1</sup>	soil	112 (d)	R	N.S.
pictoram	Tordon 22K <sup>2</sup>	soil, foliar	128 to 192 (f)	R	R

<sup>1</sup>Only for use in turf, ornamentals and forestry.

<sup>2</sup>Restricted-use only (applicator's license required).

<sup>3</sup>(f) = fluid ounces; (d) = dry ounces. 128 fluid ounces = 1 gallon, 16 dry ounces = 1 pound.

<sup>4</sup>R = Registered; — = not registered; U = label for this herbicide does not list poison ivy or poison oak among weeds controlled, but permits use on weeds not listed on the label; N.S. = label specifies poison ivy but does not identify which species and therefore may mean either species. (Hitchcock, C. L., and A. Cronquist. 1973. Flora of the Pacific Northwest. Univ. of Washington Press, Seattle. 730 p.)

\*See specific crop on label.

**Table 2. Herbicides that may be used on poison ivy and poison oak (available in small containers from garden stores).**

Herbicide					
Active ingredient common name	Commercial product trade name	Type of application	Amount of commercial product	Type of registration <sup>1</sup>	
				<i>Rhus radicans</i> (Poison ivy)	<i>Rhus diversiloba</i> (Poison oak)
triclopyr	Poison ivy and poison oak killer	foliar	coverage	R	R
2,4-D + dichlorprop	Blackberry and brush killer	foliar	coverage	R	R
2,4-D + MCP	Weed-B-Gon Jet Weeder	foliar	coverage	R	R
2,4-D + MCP + dicamba	Spurge, oxalis and dandelion killer	foliar	coverage	-	R
2,4-D + MCP + dicamba	Chickweed, spurge and oxalis killer D	foliar	coverage	R	R
glyphosate	Kleenup	foliar	coverage	R	R
glyphosate	Roundup	foliar	coverage	R	R
prometo	Triox	soil	1 qt/75 ft <sup>2</sup>	U	U

<sup>1</sup>R = Registered; U = label for this herbicide does not list poison ivy or poison oak among weeds controlled, but permits use on weeds not listed on the label; — = not registered specifically for this weed.

these are not restricted-use herbicides, an individual does not need a special license to use them. They must still be applied in compliance with the label directions, however. These herbicides are available in small consumer packages for use on small areas, and some are mixed in ready-to-use forms convenient to the homeowner (Table 2).

**Nonselective herbicides** — Glyphosate, amitrole and sulfometuron are nonselective herbicides that may suppress or destroy grass vegetation in the treated area.

### **Basal or Dormant Stem Sprays**

Herbicides such as dicamba or 2,4-D are effective when applied to the lower parts of poison ivy and poison oak stems. These can be applied at any time, including the dormant season when foliage is not on the plants. The lower 30 inches of the plant stems are wetted when this method is used. Oil-soluble formulations such as esters are more effective because they penetrate bark better than water-soluble forms.

Winter basal spraying is effective for treating isolated poison oak or poison ivy plants along fencerows and roadsides. Applying a stream of herbicides to the base of stems can provide good kill with less herbicide waste than spraying the chemical on foliage or soil. Basal application of herbicides minimizes the chance for injury to nearby susceptible plants and reduces operator exposure to the poison ivy or poison oak. Consult labels for specific directions.

### **Soil Herbicides**

Soil applications of tebuthiuron, Arsenal, sulfometuron and prometon will kill poison ivy and poison oak, but these materials are less selective and should not be

used where susceptible desirable plants are growing. If used at high rates, these herbicides may kill plants of all kinds on the site, and they may persist for several years. Be sure that the long-range effects are desired on the intended site before using soil herbicides.

October soil applications are best in Idaho, since fall and winter precipitation leaches the herbicides into the root zone before spring growth occurs. More uniform herbicide applications and better penetration to the soil surface can be obtained if poison ivy or poison oak stems are removed or burned before treatment, but the serious health hazard from smoke may exceed the benefit. Consult labels for specific directions.

### **Pesticide Residues**

These recommendations for use are based on currently available labels for each pesticide listed. If followed carefully, residues should not exceed the established tolerances. To avoid excessive residues, follow label directions carefully with respect to rate, number of applications and minimum interval between application and reentry or harvest.

### **Groundwater**

To protect groundwater, when there is a choice of pesticides, the applicator should use the product least likely to leach.

### **Trade Names**

To simplify information, trade names have been used. No endorsement of named products is intended nor is criticism implied of similar products not mentioned.