



Pokeweed

Integrated Pest Management for Home Gardeners and Landscape Professionals

American pokeweed (*Phytolacca americana*) is a robust, non-woody shrub that is spreading in parts of California. Native to the eastern United States from Maine to Wisconsin and south to Texas, Mexico, and Florida, pokeweed now occurs throughout much of North America. In California, pokeweed currently inhabits the Central Valley, the coast from Mendocino to San Diego, and the Sierra Nevada mostly below 4,000 feet in elevation. Pokeweed is found in riparian areas, oak woodlands, forest edges, fence rows, forest openings, pastures, under power lines, disturbed areas, vineyards, orchards, cultivated fields, parks, and ornamental landscapes.

Also called poke salad, poke sallet, pokeberry, inkberry, American nightshade, American spinach, scoke, and pigeonberry, the plant's uses are as diverse as its names. Pokeweed has historically been used as a food, medicine, herb, dye for clothing, ink for writing, colorant for wines, and much more. Although sometimes eaten, the entire plant is poisonous and should be considered with extreme caution. The leaves and stems of young pokeweed plants can be ingested only after repeated blanching; without proper preparation, pokeweed can cause a variety of symptoms, including death in rare cases.

IDENTIFICATION

Pokeweed is an erect herbaceous perennial shrub, 4 to 10 feet tall and 3 to 5 feet wide, with large leaves and showy purple-black berries. It has a smooth, stout, purplish stem that branches extensively and can reach up to 2 inches in diameter. The bright green, elliptic leaves are smooth, tapered, and alternate on the stem. Leaves can be large, reaching up to a foot in length and 4 to 7 inches wide (Figure 2) and have a strong unpleasant scent when crushed. The dark purple berries, bright green leaves, and red stems in late summer are the most distinguishing characteristics of pokeweed.

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BIOLOGY

Reproduction is by seed and a single plant can produce 1,500 to 7,000 seeds annually. The seeds are large, lens-shaped, glossy, and black. Seeds can remain viable in the soil for up to 50 years. Pokeweed berries serve as



Figure 2. American pokeweed leaves.



Figure 1. American pokeweed, *Phytolacca americana*.

an important food source for many species of birds, including robins, cedar waxwings, warblers, pigeons, and others. New populations of pokeweed are spread primarily by

birds. Seeds germinate in mid spring through early summer when soils are warm and moist. Germination is followed by rapid growth.

Pokeweed flowers in mid-summer. Flowers are borne in white-pinkish clusters that hang from the branches (Figure 3). Flowers consist of 5 white sepals, with no petals, are erect when in bloom, and begin to droop as fruits develop. Flowers are self-fertile resulting in high fruit set. Immature berries are dull green, turning glossy purple-black at maturity in late summer (Figure 4).

Pokeweed's above-ground growth dies back after the first fall frost, leaving large skeletons that break down over the winter. In the spring, plants resprout from a large fleshy taproot (Figure 5 and 6).

IMPACT

In wildland settings, pokeweed can form dense stands outcompeting native plants and reducing forage for livestock and other mammals. In agricultural fields, pokeweed can contaminate agricultural produce. More recently pokeweed has become common as an urban and landscape weed where it outcompetes desirable plants. The berries can be extremely messy and potentially hazardous to inquisitive youth. All plant parts, especially the roots, contain numerous saponins and oxalates and can be fatally toxic to humans and livestock when ingested raw or with improper preparations. Severe digestive tract irritation is the primary symptom following ingestion.

MANAGEMENT

Prevention

Pokeweed is spread by seed and new occurrences are often seen where birds frequent. Monitoring for new seedlings in areas below tree canopies, along fence rows, and below other perches often provides the best strategy for surveillance and early detection.



Figure 3. American pokeweed flowers.

Mechanical Control

Hand pulling is effective on small plants. Once plants are established and develop an extensive root system, hand removal is difficult. Digging out established plants with a shovel is effective, but often difficult in summer when soils are dry. Established plants may have large roots that must be removed to prevent regrowth. Cultivation can be effective on new seedlings in raised beds or other areas where tilling can be used. Cultivation on large established plants is not effective. When removing mature plants, ripe berries should be bagged and discarded so the seeds don't reinfest the soil.

Chemical Control

Treating individual plants with the systemic herbicides glyphosate or triclopyr can be effective. Glyphosate is a nonselective herbicide that will kill both broadleaf plants and grasses. Triclopyr is a selective broadleaf herbicide and will not injure most grasses. These herbicides can be applied to the foliage or to the cut stump after manually removing the stalk. Few postemergence herbicides are registered for use in ornamental plantings, so make sure selected products are labeled for use at the site to be treated.

Many residents have expressed interest in using vinegar or other organically accepted herbicide products to control pokeweed and other weeds. All these products are contact



Figure 4. American pokeweed berries.



Figure 5. Fleshy root of American pokeweed.



Figure 6. American pokeweed regrowth in the spring.

herbicides and will only affect the part of the plant directly sprayed. Many of these products are botanically based oils (e.g., clove oil, eugenol, and d-limonene), or fatty acid soaps (e.g., pelargonic acid and nonanoic acid), or acetic acid. These products control weeds by destroying the leaf surface or causing cell leakage that rapidly leads to plant death. They may control small newly germinated pokeweed plants but will not control established perennial plants. Such products have no residual (lasting) activity, so seeds that germinate after application will not be controlled.

Household vinegar is usually 5% acetic acid and is not effective in killing mature pokeweed. It is important to note that many of the commercial horticultural (herbicidal) vinegar products available in stores and online are sold at a concentration of 20% acetic acid and carry a DANGER signal word to indicate the potential for acute toxicity when a person is exposed. To be effective, commercial herbicidal vinegar products should be used at full strength (not diluted) and handled with extreme care. Applicators using herbicidal acetic acid must wear appropriate protective eyewear and a respirator along with long sleeved shirt, pants, waterproof gloves, and shoes plus socks. As with any pesticide, always read the product label carefully and follow the instructions.

Foliar application of herbicides to pokeweed is most effective after leaves are fully developed and when the plant is actively growing. This period normally is from April to August when soil moisture remains adequate. Seedlings can be treated in early spring through summer.

In areas where seeds may be present in the soil, a preemergence herbicide containing dithiopyr, isoxaben, oryzalin, and trifluralin can be effective in managing pokeweed. Like all preemergence herbicides, these must be applied to the soil before the seeds germinate or in combination with one of the postemergence herbicides.

Foliar Sprays. Herbicides can be applied as foliar sprays using one of two methods. The first is “spray-to-wet”, where all leaves and stems should glisten following an application. Coverage, however, should not be to the point of runoff. Spray-to-wet applications are made using a backpack or hand sprayer with a flat fan or adjustable spray nozzle. The other foliar method is a low-volume technique called a “drizzle” application, using a spray gun fitted with an orifice disk (Figure 7). Rather than spraying the entire canopy as in a spray-to-wet treatment, a drizzle application is made to the canopy using an intermittent pattern. It is important to note that the two foliar techniques use the same amount of herbicide active ingredient on a given plant but within different total volumes of water. In a spray-to-wet application, total spray volume can range from 20 to 100 gallons per acre while, when using the drizzle technique, total volume will be between 2 and 5 gallons per acre.

The drizzle application is useful for managing plants in areas that are difficult to access. The drizzle nozzle will reach a target plant 15 to 20 feet

away, while a flat fan nozzle may only reach plants 2 to 3 feet away. Because of larger spray droplets, the drizzle method also minimizes herbicide drift. The lower volume of water used also reduces sprayer refilling requirements and total weight, potentially reducing applicator fatigue.

For spray-to-wet applications, products containing at least 41% glyphosate as the active ingredient can provide good to excellent control of pokeweed when applied at 2.5 to 4 ounces of product per gallon of water (2% to 3% of the total solution). Some products available for use in the home landscape with this concentration of active ingredient are Roundup Pro®, FarmWorks Grass & Weed Killer 41% Glyphosate Concentrate, RM43 Total Vegetation Control, Compare-N-Save Grass & Weed Killer Concentrate, and Remuda® Full Strength. Glyphosate products that have a lower concentration of active ingredient, such as Roundup Weed & Grass Concentrate (18% active ingredient), will require 5 to 7 ounces of product per gallon of water (4% to 6% of the total solution) for effective control.



Figure 7. Example of drizzle herbicide treatment.

Products containing a minimum of 61% active ingredient of triclopyr provide excellent control when applied at 1 to 1.25 ounces of product per gallon of water (0.75% to 1% of the total solution). One such product with this concentration is Brushtox Brush Killer with Triclopyr. Triclopyr products with lower concentration are also available including Crossbow, Bayer Bio Advanced Brush Killer Plus, Ortho Brush-B-Gon Poison Ivy and Poison Oak & Brush Killer, and Monterey Brush & Vine Control. These products contain 8% active ingredient and will require 8 ounces of product per gallon of water (6% of the total solution). Mixing triclopyr with commercially available seed oils can increase herbicide uptake. One available product is Hasten-EA modified vegetable oil

concentrate. Add this to the herbicide solution at 1.25 ounces of product per gallon (1% of the total solution).

For drizzle applications (“low volume”; as per product labels), products containing at least 41% glyphosate can provide good to excellent control of pokeweed when applied at 13 ounces of product per gallon of water (10% of the total solution).

Triclopyr can also be applied using the drizzle method. Products containing 61% active ingredient should be applied using 6.5 ounces of product (5% of the total solution) and 13 ounces of seed oil (10% of the total solution) per gallon of water.

Since drizzle applications use a higher concentrated herbicide solution, one

gallon of mixed solution will adequately treat up to one-half acre of densely populated pokeweed.

When air temperatures are higher than 80°F, it is better to use glyphosate or the amine formulation of triclopyr, since triclopyr ester is subject to vaporization.



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WARNING ON THE USE OF PESTICIDES

Pesticides are poisonous. Some pesticides are more toxic than others and present higher risks to people, nontarget organisms, and the environment. A pesticide is any material (natural, organic, or synthetic) used to control, prevent, kill, suppress, or repel pests. "Pesticide" is a broad term that includes insecticides, herbicides (weed or plant killers), fungicides, rodenticides, miticides (mite control), molluscicides (for snails and slugs), and other materials like growth regulators or antimicrobial products such as bleach and sanitary wipes that kill bacteria.

Always read and carefully follow all precautions and directions provided on the container label. The label is the law and failure to follow label instructions is an illegal use of the pesticide. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, and animals. Never place pesticides in food or drink containers. Consult the pesticide label to determine active ingredients, correct locations for use, signal words, and personal protective equipment you should wear to protect yourself from exposure when applying the material.

Pesticides applied in your garden and landscape can move through water or with soil away from where they were applied, resulting in contamination of creeks, lakes, rivers, and the ocean. Confine pesticides to the property being treated and never allow them to get into drains or creeks. Avoid getting pesticide onto neighboring properties (called drift), especially onto gardens containing fruits or vegetables ready to be picked.

Do not place containers with pesticide in the trash or pour pesticides down the sink, toilet, or outside drains. Either use all the pesticide according to the label until the container is empty or take unwanted pesticides to your local Household Hazardous Waste Collection site. Contact your county agricultural commissioner for additional information on safe container disposal and for the location of the Hazardous Waste Collection site nearest you. Follow label directions for disposal of empty containers. Never reuse or burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways.

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