

CONTROLLING INVASIVE PLANTS

Effectively & Safely with Herbicides

Treating nonnative invasive plants with herbicides is often the most effective and quickest way to rid your land of these noxious weeds. It may also be the least expensive way. How you apply the herbicide depends upon which invasives you are treating, how bad the infestations are, and the time of year you are working, among other factors. See the PRISM factsheet titled *Herbicide Basics* to learn about different types of herbicides and how to safely handle them.

Herbicides can be applied several ways:

- ❖ **Foliar Spray:** sprayed onto green leaves
- ❖ **Wick/sponge:** wiped onto green leaves
- ❖ **Cut Stump:** sprayed or painted into cut stem or trunk
- ❖ **Basal Bark:** sprayed or painted onto lower trunk
- ❖ **Hack & Squirt:** squirted into cuts in trunk

FOLIAR APPLICATIONS

Using a **backpack sprayer** to apply herbicide to a plant's leaves is the most frequently used method of controlling invasive plants. You can adjust the sprayer's nozzle to **spot-spray** individual plants or to **broadcast-spray** large infestations or colonies. Several brands and models of sprayers are available – choose one with waist and/or chest straps that fits you comfortably.



The blue-green leaves in this photo are Japanese honeysuckle that was spot-sprayed with herbicide containing a dye marker. Spraying the evergreen plant in fall after desirable plants have lost their leaves prevents collateral damage.

These usually hold 3 gallons, so the filled sprayer weighs over 30 lbs. If weight is a problem, you can fill it with 1 ½ or 2 gallons. When spraying an extensive infestation, you'll be able to empty the backpack in under an hour. Patrolling for scattered invasives, it may mean several hours per backpack.

Contractors often use a **boom sprayer** or **wide-spreading nozzle**, mounted to an ATV to treat entire fields. This allows the contractor to rapidly and inexpensively treat large areas, because it reduces labor costs. Correct alignment and aim of the nozzles is needed to prevent the spray from drifting onto bordering areas of nontarget plants. Sometimes a **wick** mounted on an arm attached to an ATV or tractor is used to kill tall invasive plants in a native meadow, pasture or hayfield. The wick contains a foliar herbicide and wipes the treat-

ment onto the tallest plants as the vehicle moves up and down the field. This method is useful for Johnson grass about three weeks after mowing, and for invasive thistles, which tower above other plants in the field in mid- to late summer.

Where invasives grow close to desirable native plants, you might try hand methods other than spraying to avoid collateral damage in the high-quality site. You can make **wick applications** with a special tool that is a **sponge** or **wick** mounted on a long handle. **Paint sticks** and **stain sticks** sold at hardware stores also make handy wick applicators. Some paint sticks have a reservoir in the handle meant for paint that could be used to hold herbicide. This method eliminates the possibility of spray drifting onto non-target plants.

Wearing waterproof gloves, dip the sponge end into a container of herbicide, then wipe off excess solution. Brush or wipe the sponge or wick across the surface of the leaves of the target plant. Be careful to avoid neighboring plants. To avoid tipping the container of herbicide, carry and stabilize it in a well-balanced bucket or basket.

Cut-Stump Method

Felling an invasive tree or cutting an invasive shrub to the ground may get rid of it temporarily and prevent it from flowering and spreading its seeds. However, invariably it will send up suckers (new stems) from its roots. Resprouting is easily prevented by applying herbicide to the cut stump. A concentrated, water-soluble foliar herbicide works well. You can also use a ready-to-use (RTU) product designed to kill stumps.

Cut the tree's trunk with a **handsaw** or **power saw** at a comfortable height close to the ground. If cut-stumping a shrub, be sure to cut every stem that

emerges from the ground. Apply the herbicide within a few minutes of making the cut, using a **hand-held spray bottle** or **paintbrush**. You need only spray the outer edge of the cut stump, because that's the living part of the stump, which moves the herbicide down into the root system. With small stumps, you may find it difficult to avoid spraying the entire stump. Spraying all of the cut surface does no harm, but does waste a little herbicide.



Painting or spraying a concentrated herbicide onto the outer edge of a cut stump kills the root system and prevents resprouting.

Basal Bark Application

No cutting involved here. You spray or paint concentrated herbicide directly onto the invasive tree's bark. It works best for young trees, because their bark is thinner and absorbs the herbicide better. This method can also work for large shrubs, but it may be too difficult to reach the trunks of shrubs that have low dense branches that interfere with your reach.

You'll need to apply a foliar herbicide at a higher concentration than required for actual foliar application. Ester formulations, as opposed to salt formulations, of the herbicide are often



Kill young trees with thin bark by applying concentrated herbicide to the lower 6 to 12 inches of the trunk.

recommended. This is because esters pass more readily through the bark. Esters are oil soluble, not water soluble, so you need to dilute them with a horticultural oil, or use the concentrated product full-strength without dilution. Add a dye so you'll know where you sprayed or painted. Esters are highly volatile, so make basal bark treatments only on cool, windless days.

Use a *hand-held spray bottle* and clearly mark it as containing concentrated herbicide. (You can also apply the herbicide with a backpack sprayer or a wick or paintbrush.) Spray a band around the entire circumference of the tree to be treated. Make the band 6 to 12 inches high from near ground level on up. The height depends upon the size of the tree and its susceptibility to the herbicide.

The PRISM's invasive plant factsheets provide herbicide recommendations for particular plants.

Hack & Squirt & Injection Methods

Also called the *frill method*, *hack & squirt* treatments are used to kill mature trees with large, thick trunks. Using a *machete* or *hatchet*, hack 3-inch deep pockets at a 30° angle spaced 2 inches apart around the tree at about chest height. Then immediately squirt concentrated herbicide into the cut, using a handheld squirt bottle, syringe, or backpack sprayer. Because the herbicide goes directly into the tree trunk's actively growing tissue (cambium), the amine (salt) formulation in a water-based solution works just fine. You can use full-strength concentrated herbicide or dilute it by half. The PRISM's factsheets on particular invasive plants give recommended concentrations.



It's easy to kill invasive trees by hacking into the bark and then spraying concentrated herbicide into the cuts.

The herbicide works more effectively when you leave a space between each cut. Making continuous hacks girdles the tree and prevents the herbicide from moving throughout the tree, causing sprouting from the roots. By spacing the hacks, all of the tree's water and nutrient conductive tissues are not harmed and the herbicide moves throughout the tree, killing it. This works

best at a time of year when the tree is not actively growing but when it is preparing for dormancy. When actively growing, plants send nutrients and water upward, so an herbicide may not be moved down into the root system. From late summer into late fall, movement is downward into the roots for winter storage, so herbicide applied at that time does an effective job.

In a variation on the hack & squirt method, foresters and contractors sometimes apply herbicide to an invasive tree's trunk with a *hypo-hatchet*, a tool that both cuts and injects herbicide with one movement. These devices contain a reservoir to hold herbicide. The herbicide is injected into the trunk as the hatchet cuts into it. These tools are expensive, but make quick work of killing a grove of tree-of-heaven, for instance.

Herbicide Cautions

Be sure to use the concentration recommended on the herbicide's label or on the PRISM's factsheets. Using a higher concentration besides being illegal is a bad idea; it will not kill the plant faster or better. Rather, a higher concentration may be *less* effective. It can burn leaves and prevent the herbicide from being absorbed and transported throughout the plant. However, using a lower concentration for particular plants that are highly sensitive to an herbicide does make sense. If an herbicide works for a particular plant at a lower concentration than recommended for general use, the PRISM's factsheets recommend that concentration.

Take care when spraying that the herbicide does not drift onto nearby desirable plants. Spray only on calm days. High air temperatures can cause herbicides to evaporate or volatilize and the vapor can harm nontarget plants. Therefore, it is best to limit spraying to times when it is cooler than 85°F. Even a small amount of herbicide on leaves of a nontarget plant might kill or disfigure it, although a few drops are usually of no concern.

Mixing Herbicides in a Backpack Sprayer

Although you can purchase RTU herbicides, if you are attacking a lot of invasive plants, you'll save money by purchasing concentrated herbicides and diluting them with water. This mixing must be done carefully.

USE EXTREME CAUTION WHEN MIXING HERBICIDES!
If you get concentrated herbicide on your skin, that may be the equivalent of working an entire day in a treated field.

Before mixing any herbicide, READ THE LABEL

- ❖ Work in a well-ventilated place.
- ❖ Have on hand: heavy plastic garbage bags, a shovel, and kitty litter to clean up leaks and spills.
- ❖ Label measuring equipment to avoid confusion with equipment used for measuring food.
- ❖ Wash all utensils before storage to prevent contaminating future mixes.
- ❖ Fill the sprayer half-full of clean water; add a surfactant if the product does not have one; then add a dye; finally carefully measure and add the herbicide.
- ❖ Rinse the measuring equipment three times and add the rinsate to the tank solution. Top up with water to the 3-gallon mark.