DIY HERBICIDE APPLICATION

THOUGH LANDOWNERS SOMETIMES MUST ATTACK UNWANTED VEGETATION BY AIRCRAFT OR WITH THE HELP OF A GROUND CREW, IT'S POSSIBLE TO HANDLE SMALLER AREAS SOLO.

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PHOTOS BY JAIME POHLMAN

Privet. Tree-of-heaven. Wisteria. Nepalese browntop. There is an endless list of invasive species that can grow in the forest, all of which can impact forest health and productivity.

There are plenty of native species, too, like sweetgum and (in some cases) red maple, that may lead to similar impacts. In some situations, prescribed fire reduces unwanted vegetation, but this isn't always practical. The same goes for employing herds of goats, a creative plant control method increasing in popularity since, after all, goats eat most.

The use of herbicides, however, remains the most common way to eliminate unwanted vegetation in forests.

Herbicides can be applied from the ground or by air, by the landowner or by hired help. Most landowners don't own airplanes, and most don't have a contract crew on standby. Since the 2020 pandemic kept people at home, inspiring a noticeable increase in the amount of property improvement work, this could extend into do-it-yourself (DIY) forest management activities, including eliminating unwanted vegetation.

Before discussing managing vegetation with herbicides, it's important to stress that the label is the law; it is a legally binding document, specific to each active ingredient and formulation. Plus, because herbicides can be expensive and negatively impact the environment, they should be applied as efficiently as possible.

It's important not to apply herbicides during severe droughts because they are not as effective when plants go into stress dormancy and make sure the herbicide is only going to the target area and not hitting desirable vegetation.

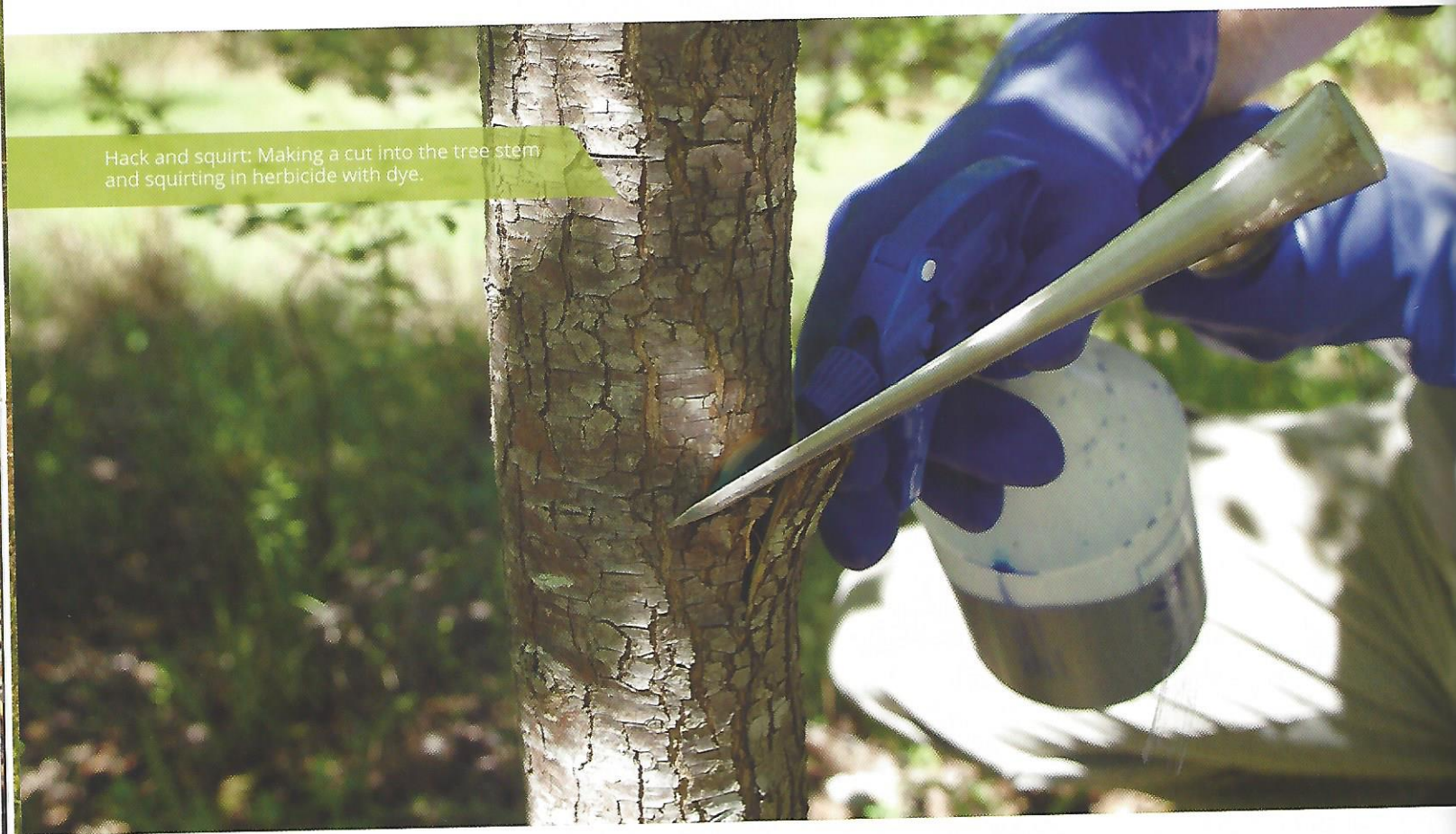
Maintaining equipment in good condition is a must, as is wearing proper personal protective equipment, including boots, long pants, long-sleeved shirt, hat, chemically-resistant gloves, and eye protection. Since some herbicides require a pesticide applicator license to purchase and apply - each state has its licensing requirements, it's important to check with state agencies before applying.

There are many different herbicides available. Selecting the most effective herbicide is important for ecological, financial, and personal safety reasons. There are several factors in choosing the most appropriate form of control. Common "active ingredients' include glyphosate, triclopyr, imazapyr, and metsulfuron-methyl. If possible, use selective herbicides that target specific species to minimize damage to non-target plants.

Glyphosate is one of the most widely used herbicides in the United States, featured at length in the November/December 2019 issue of Forest Landowner magazine. It's a systemic insecticide (meaning it is absorbed by the plant) and is applied to the leaves to kill both broadleaf plants and grasses. Products containing glyphosate are sold in various formulations, including liquid concentrate, solid, and ready-to-use liquid.

Glyphosate is best known by the brand name Roundup but is often labeled as "weed killer" or another generic name. Glyphosate can be applied using a wide range of application methods, including aerial sprays, ground broadcast sprayers of various types, shielded and hooded sprayers, wiper applicators, sponge bars, injection systems, and controlled droplet applicators.

Triclopyr is a systemic foliar herbicide used to kill broad-



Hack and squirt: Making a cut into the tree stem and squirting in herbicide with dye.

When cutting a stem, coat the cut area with herbicide (again with dye added) so it's possible to see what's been treated.

leaf and woody plants. Triclopyr is "selectively systemic," meaning it is readily absorbed by plant roots and leaves but affects herbaceous plants more than grasses. It affects growing plants by acting as a growth hormone and causes uncontrolled plant growth until death.

Products containing triclopyr typically are sold in the form of concentrated liquids, granules, or mixable powders; generic forms might be called "brush killer." There are lots of products commercially available that contain triclopyr, including Scrubcutter, Victory TM, Brush Off, Grazon, Renovate, Weed B Gon, and Tough Brush Killer. These products can be applied on tree bark, injected into tree trunks or soil, or sprayed on leaves.

Imazapyr is a non-selective systemic herbicide used to target a broad range of weeds including grasses and broadleaved plants, woody species, and several aquatic species. Because of this, it can be used where complete vegetation control is needed or in spot applications.

Care should be taken because imazapyr does not distinguish between the plants it kills, and non-target species can be easily damaged. Imazapyr is slow-acting and persistent in the environment. It is best to apply the herbicide directly to vegetation using a low-volume backpack sprayer, cut-stump, or basal bark application methods. Imazapyr can be found in commercially available products like Ortho GroundClear, Brush Killer, and Total Vegetation Control.

Metsulfuron methyl is a selective systemic herbicide used to control some species of broadleaf and woody plants, along with select species of grasses. This herbicide acts quickly and can be used effectively at relatively low rates. It is quite persistent in soils, however, and should not be applied where tree planting will occur in the coming years. Metasulfuron methyl is commercially available in dry flowable formulations and is used in commercial products like MSM Turf Herbicide, Manor, and Blade.

Once a product is chosen, an area targeted, and protective equipment donned, it's time to determine how to apply the herbicide. That's decided not only by what's targeted, but also on the time of year, weather conditions on the day of treatment, the surrounding non-target vegetation, and the equipment available.

Most herbicides labeled for forestry use can be applied using a variety of methods. And most of the equipment needed for the methods can be purchased at a farm and garden center or a big box home improvement store.

One of the most common methods of treatment is a foliar application. This method uses a foliar active herbicide which is absorbed by the leaves of the target vegetation and is effective on herbaceous as well as vines, shrubs, and woody vegetation. Leaves must be present, and therefore the application is made during the growing season for annual or perennial herbaceous vegetation, and on deciduous vines, shrub, and tree species. Application timing will vary based on target vegetation and herbicide selected. Treatment of woody vegetation is usually most effective in the late summer to early fall when the herbicide is taken up by the leaves and drawn down into the roots.

This treatment method is usually done with a backpack sprayer equipped with a fan nozzle. Properly calibrating the sprayer to determine the application rate is important to ensure that the prescribed amount of active ingredient is applied. Generally, vegetation up to head high can be effectively treated. Foliage is normally sprayed to the point of being wet but the herbicide not running off.

Depending on the leaf characteristics, a surfactant might be required to make the herbicide "stick" to the leaf surface. Dyes also can be added to the tank mix to track which stems or plants have been treated. If vegetation is too tall to treat, the stems can be cut and allowed to put on new growth before spraying. Any time the top of unwanted vegetation is cut or removed, it should be done before seed production to ensure that seed is not spread, which can increase the target vegetation impact area.

Herbicides with soil activity should not be used in areas where desirable species could absorb the chemical through their roots. Weather considerations include rain-fastness of herbicide, temperature range to reduce volatilization, and appropriate wind speed to reduce drift.

Often shrubs, vines, and other woody stems become too tall to treat with a foliar application, or the volume of leaf surface area makes a foliar application too expensive or time-consuming. A basal bark application employs many of the same forestry herbicides as a foliar application, but the chemical is applied to the lower bark of the stem instead of the leaves. This method is effective only on species that have permeable bark and remain thin-barked as they grow, such as privet, or on small stems before their bark begins to thicken. A good test to determine if a basal bark treatment will be effective on a target species is to scratch the bark with your thumbnail to see if the outer bark can be easily removed. If it can, a basal bark application might be effective.

A carrier, such as a crop oil or a basal bark oil, is necessary for a non-water-soluble herbicide to be absorbed by the bark and taken into the stem. Basal bark treatments are most effective in the late summer or early fall as stems are translocating resources down into their roots. Avoid spring, when the sap is rising. A backpack sprayer equipped with an adjustable cone nozzle at low pressure can be used. The entire lower 12 to 20 inches of every stem in a clump should be sprayed on all sides. Also, spray large exposed roots. The application should

With a larger tree, it's not necessary to coat the entire stem.

be made to the point that the stems are coated completely but the mixture is not puddling at the base.

For any woody stems that cannot be treated with a basal bark application due to the thickness of their bark or stem diameter, an effective control option is a two-step method called hack and squirt. This method creates downward openings in the bark of the tree with a hatchet or large machete, into which a specific volume of an herbicide labeled for this treatment method is immediately sprayed with a hand-held squirt bottle.

The number of hacks per inches in stem diameter and the concentration of the herbicide mix will be based on the herbicide label. Dye added to the spray mix will make the application location more easily visible. The application method is generally effective except in early spring when the sap is rising since the wound created by the hacking step can weep and push the herbicide out instead of absorbing it into the stem. This method can be physically demanding if used in areas with many stems requiring treatment. Another consideration when using this method is that this will result in standing dead stems, which some landowners might wish to avoid in highly visible areas.

The cut stump method is also ideal for treating woody stems, but unlike the hack and squirt method, the entire stem is cut down to ground level before herbicide application. For small stems, this can be done with a hand saw but for larger stems, it will require a chainsaw (and related protective equipment).

Again, late summer to early fall is generally the best time for this treatment method so that the herbicide will be translocated into the roots. The cut surface should be sprayed immediately after cutting with a labeled herbicide containing dye. As with the hack and squirt, the concentration of the herbicide mixes to apply will be based on the recommended rate on the herbicide label. A good rule is to coat the entire surface if the stem is three inches or less in diameter and to treat the bark and adjacent wood of stems four inches and larger in diameter. Cut stump method also can be labor-intensive since it requires felling the entire stem, but a benefit is that it will not leave standing dead material.

There's no shortage of herbicide products available to clear unwanted brush and vegetation. It's important to choose one with the right active ingredient for the task.

In general, herbaceous vegetation can be managed with a foliar application of glyphosate. For vines, if most of the foliage can be safely reached with a foliar treatment, glyphosate or triclopyr usually work. If the vines are tall and into the treetops, there are a few options. A basal bark or cut stump (or stem in this case) treatment is likely to be effective. Or the stem can be cut, foliage allowed to regrow into a "bush," and a foliar application used.

If vines are tightly wound around tree trunks, cutting them in the summer may cause them to constrict as they dry out, and this may harm trees – cutting them in winter will eliminate this possibility. For shrubs such as privet or honeysuckle, treating the foliage in late winter is effective, as is a basal bark treatment in late summer. Cut stump or hack and squirt treatments are effective for all unwanted trees.

Vegetation management can be a DIY endeavor, but always know the rules and regulations to keep safe, obey the law, and be effective. Done wrong, DIY herbicide treatments can be costly and ineffective. A local extension agent or state forestry agency or private contractor can assist if needed.

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