

# Basal Bark Herbicide

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## Introduction to Basal Bark Herbicide

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Basal bark treatment is a woody invasive plant control method that involves spraying herbicide or herbicide mixture carried in oil onto the stems bases of target plants. It is generally only effective on plants with a diameter at breast height of 6" or less (Jackson 2017). It is most practicable for low-to-moderate density infestations at sites where the presence of standing dead plants is acceptable.

## How it works

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Herbicides in oil can penetrate the relatively thin bark of smaller trees, shrubs, and woody vines. The chemical is transported by the vascular tissue to the root system, preventing regrowth. Herbicide injury may not be observable for several weeks, and the plant may not die for months following treatment (Ferrell et al. 2015).

## Methodology in Detail

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### Timing Considerations

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Low volume basal bark herbicide treatment can be conducted any time of year, but may be less effective in early spring during upward sap flow when plants are drawing material upward from the roots. It should not be conducted when the lower trunks or stems of target plants are covered by snow or floodwater. Excessive moisture will cause the herbicide solution to emulsify, decreasing its ability to penetrate bark (Dow Agrosiences 2011). The Natural Resources Conservation Service in Indiana (2009) reports problems with effectiveness in both very cold and very hot weather (below 20oF and above 90oF).

### Choosing Herbicide

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Herbicides that are suitable for basal bark treatments are systemic meaning that they are absorbed into the target's tissues and transported throughout the plant. The most commonly used herbicides for basal bark treatment are oil soluble, though some water soluble herbicides are labeled for basal bark application when mixed as a water-oil emulsion. When choosing a systemic herbicide, a site manager should consider the site characteristics, the species being treated, and the environmental behavior of the chemical relative to long-term goals for the site.

The herbicides and mixtures used for basal bark treatment are not labeled for aquatic use. Therefore, managers should use other practices for areas with saturated soils or surface water.

Due to differences in species biology, certain chemicals or chemical mixtures work better on some species than others. Herbicide labels include a list of weed species controlled. If a species does not appear on an herbicide label's control list, it does not necessarily mean that the herbicide will not work – just that the manufacturer has not tested it or established a recommended rate and does not guarantee efficacy. University extension programs, research programs, and state agencies engaged in forestry and invasive species control are also often great sources of species specific herbicide recommendations. The Midwest Invasive Plant Network (a WIGL founding partner) consolidated these recommendations for many species in its Invasive Plant Control Database.

The primary biological factor impacting basal bark treatment effectiveness is the thickness of the target species' bark. At a diameter at breast height less than 6" (less than 6" per stem for multi-stemmed species), most tree, shrub and vine species will have bark that is thin enough to be penetrated by an oil-based herbicide mixture. However, within this size class, there are differences in bark thickness. Species with thicker, ridged bark may require a higher concentration of herbicide or a different mixture of active ingredients. When treating a high density infestation of any species, but particularly thick-barked species where a higher

concentration of product is used, managers must track the amount of chemical used carefully so as not to exceed label specified maximum annual application rates. Herbicide mixtures should always be done according to the herbicide product label.

## **Carrier Oils**

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There are a number of carrier oils that can be used for basal bark applications. These include diesel, kerosene, fuel oils, methylated seed oil, crop oil, and specialized basal oils. Always consult the herbicide product label to ensure use of appropriate carrier oil. Oil based mixtures of herbicide need to be agitated thoroughly to ensure proper mixing. Note that a few oil-based herbicide products are labeled ready to use/RTU and do not require mixing with carrier oil.

## **Chemical Adjuvants and Additives**

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Specialized basal oils usually come pre-mixed with herbicide dye. If the carrier oil is used is colorless, herbicide dye is a recommended addition to the mix. Use of a dye will allow applicators to ensure complete coverage of stems, more easily recognize blow-by, track which stems have been treated, and can also alert any other site users that an herbicide was recently applied.

## **Equipment for Application**

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A low-pressure backpack sprayer is the preferred application equipment for sites with an appreciable number of stems receiving basal bark treatment. The sprayer should be outfitted with oil-resistant gaskets, hoses, seals, and other fittings to prevent damage. Most experts recommend installing a brass wand with a shut-off valve (Lemin 2019, Enloe 2016, Williamson 1998). Regardless of the wand used, experts also recommend an adjustable cone nozzle (ideal, according to Lemin 2019), a solid cone nozzle, or a flat fan nozzle with a narrow angle of 15-25 degrees (Jackson 2017, Williamson 1998).

A chemical proof hand spray bottle with a nozzle that produces a mist, and rope wick or foam roller hand tools can also be used for basal bark application (Miller et al. 2015). The handles of specialized wick and roller tools are usually 3-4' long, made of PVC, and have hollow reservoirs for herbicide which is fed to a permeable wick (usually made of cotton rope) or a foam roller. These tools may be suitable for very small projects and where high selectivity is needed to protect desirable plants, but are likely too limited in herbicide capacity and durability for larger jobs.

## **Personal Protective Equipment for Herbicide**

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Always follow personal protective equipment recommendations on the herbicide product label.

## Herbicide Regulations, Training, and Certification

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Each Great Lakes jurisdiction has regulations regarding the registration and labeling of pesticide products and the training and certification of pesticide users. Note that not all herbicides are registered for use in all jurisdictions and it is illegal to use a product in a jurisdiction where it is not registered. In Ontario, Canada the use of most synthetic herbicides on non-agricultural and non-forestry land is prohibited by law. Persons seeking to use herbicide to control invasive plants for the benefit natural resources in Ontario are required to seek an exemption under the Pesticide Act.

U.S. state governments generally require that any anybody applying herbicides on non-residential or non-farm properties or applying herbicide in exchange for payment undergo training and pass a certification or licensing exam (see program links below). Certain pesticides are labeled as restricted use at the federal and state levels that require certification for purchase and use in all cases. Ontario requires licensing of all persons seeking to purchase and apply pesticides. It is usually necessary to renew certification or licensing periodically. Managers should be certain that all staff and volunteers using herbicide have adequate training and current certification. Any hired applicators should be asked for proof of current jurisdictional certification.

Pesticide Training and Certification Programs:

IL IN MI MN NY OH ON PA WI

## Application Method

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Any debris that is pushed up against the base of the stems being treated should be cleared before application. The goal of a low volume basal bark application is cover the entire circumference of the bottom 12-15" of the target stems with a single coat of herbicide without runoff, blow-by or spatter. If using a backpack sprayer, spraying in a downward motion is recommended (i.e., starting 15 inches up and moving nozzle towards the stem base), using the wand's easy-off valve to stop the spray while the wand is raised again. Application using an up-and-down motion can result in over-use of herbicide (Dow AgroSciences 2011). For multi-stemmed targets including clonal colonies, all stems must be treated for maximum effectiveness.

## Stop the Spread

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If invasive plant seeds are likely present on site (e.g., the plants being treated are fruiting or have fruited previously), all equipment and operator clothing and footwear should be cleaned before leaving the site to prevent spreading invasive plant seeds to new locations.

## Monitoring and Follow-up

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Any invasive species treatment needs to be monitored for effectiveness and for invasive species re-growth in the years following treatment. Basal bark treatments can be repeated if necessary, though herbicide label-specified annual limits must be followed.

## References and Further Reading

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- Dow AgroSciences. 2011. Facts on basal bark application.
- Ferrell, J, Enloe, S, and B Sellers. 2015. Herbicide application techniques for woody plant control. University of Florida, Institute of Food and Agricultural Sciences Extension. Doc # SS-AGR-260.
- Jackson, DR. 2017. Using basal bark herbicide applications to control understory tree species. PennState Extension.
- Lemin, RC, Jr. 2019. Herbicide application as a forest management tool. University of Maine, School of Forest Resources.
- Midwest Invasive Plant Network. 2012. Invasive Plant Control Database.
- Miller, JH, Manning, ST and SF Enloe. 2015. A Management Guide for Invasive Plants in Southern Forests. United States Department of Agriculture, Forest Service, Southern Research Service. SRS-131.
- United States Department of Agriculture, Natural Resources Conservation Service, Indiana. 2009. Low volume basal bark treatment. Forestry Technical Note.
- Williamson, M. 1998. Selective herbicide applications for low impact vegetation management of exotic species and enhancement of native plant communities. Proceedings of the Exotic Pests of Eastern Forests Conference. U.S. Department of Agriculture, United State Forest Service & Tennessee Exotic Pest Plants Council.

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