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Tippecanoe Invasive Cooperative Taskforce Newsletter
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Herbicide Recommendations for Controlling Invasive Woody Plants

By: Lenny Farlee
Extension Forester, Purdue University

Herbicides are not the only way to manage invasive plant species, but they are a potentially effective part of a management strategy. Some keys to using herbicides effectively are understanding the application methods, formulation, additives, timing, and safety procedures required to successfully use these materials. This article will outline several types of herbicide and application options to enlarge your tool kit for invasive plant species management.

Read the label. Effective herbicide use starts with a careful reading of the label to discover what applications are allowed and effective and what plants it may be able to control. The label provides information on recommended application techniques, mixtures and concentrations, what species it may control, and important safety information related to personal protective equipment (PPE) and application limitations to protect the applicator and environment. Herbicides use a variety of chemical approaches to disrupt or damage plants. Some herbicides can act in a complimentary way and some may work against each other. Labels will often provide information on what other herbicides may be mixed with that herbicide. Read the label to understand the use of the herbicide and recognize the legal requirements for that application – the label is the law.

Herbicides are applied to plants in several ways:

Foliar applications are applied with a variety of sprayers to coat plant foliage with herbicide mixtures. The herbicide penetrates the leaf surface and acts on the plant according to herbicide mode of action. These applications are typically limited to the growing season when leaves are present and active, although some plants holding leaves in winter may be successfully treated when temperatures rise enough to have some plant activity (generally 50 degrees F or higher.)

Cut-surface applications involve applying herbicide mixtures into cuts created on stems or stumps of plants. The herbicide then acts on the stems and/or roots to kill the plant.

Basal-bark applications place herbicide mixed with an oil/penetrant carrier onto stems or trunks. The oil/herbicide mixture penetrates the bark or stem surface and enters the plant.



Pictured, clockwise: foliar spray, basal bark, and cut-surface herbicide applications.
Photos thanks to Purdue Extension – Forestry and Natural Resources

Herbicide Recommendations for Controlling Invasive Woody Plants, continued...

Glyphosate herbicides, available under many trade names like Roundup, Glypro, Razor and others, are useful for foliar and cut-surface applications. Purchasing Glyphosate concentrate, 41% or greater glyphosate active ingredient, is often the most economical option. Glyphosate can control many invasive plants when used as a foliar spray on actively growing leaves.

I use a mixture of 3% glyphosate concentrate (41% active ingredient) and 97% soft or treated water for Asian bush honeysuckle, Japanese honeysuckle, burning bush, multi-flora rose, Japanese barberry, and other woody plants. Please note, if you have hard or high pH water this may reduce the effectiveness of the glyphosate so treat the water prior to mixing in glyphosate herbicides. Prep the water by dissolving a cup of spray-grade ammonium sulphate into 3 gallons water prior to adding herbicide, or collect rainwater or other soft water. Effectiveness can also be enhanced by adding a non-ionic surfactant to the herbicide mixture, following the label directions for the surfactant used. Add a spray dye to track where you have sprayed. Apply summer to fall. Discontinue foliar applications when leaves start to turn color in the fall. Full coverage of the entire leaf area is critical to get good control of the woody plants.

Plants too large to spray or plants like autumn olive, Callery pear, and privet that are not easily controlled with foliar applications can be cut near the ground and stump sprayed with 50%-75% glyphosate concentrate (mixed with water) when temperatures are 25 degrees F or higher. When temperatures are below 25 degrees F, wood may be frozen and prevent entry of the spray.

These water-based materials should be applied to cuts within 15-20 minutes or less to have good uptake of herbicide into the plant. Waiting longer may result in the cut surface sealing and not accepting the herbicide.



Triclopyr herbicides may be used to control a wide range of broadleaved plants but are not effective on grasses. There are two formulations of this herbicide. The amine formulation is water based and can be used for cut surface or foliar applications. Read the label of the various Triclopyr amine products like Garlon 3A, Triclopyr 3, and Vastlan to determine the recommended rates of application for cut surface or foliar applications. This is an excellent choice for girdling and frilling of large trees, cut-stump treatments, and foliar treatments of many woody invasive plants.

The ester formulation of Triclopyr can be used for basal bark, cut stump, and some foliar applications. They are typically not labeled for girdling or frilling applications. The Triclopyr ester products like Garlon 4, Triclopyr 4, and Pathfinder II are good choices for basal bark applications. Pathfinder II is a ready-to-use formula that can be applied directly from the container. The other products are concentrates that are mixed with an oil carrier at a rate of 15-25% concentrate mixed with the balance oil, which can be diesel, kerosene, or basal oil (check the label).

Apply the herbicide/oil mixture to the lower 12 to 18 inches of the stems. Start applying from above and allow the herbicide mixture to flow down and around stems for complete coverage. Avoid applications when temperatures exceed 85 degrees F as this mixture can volatilize and float off of the target plant, potentially impacting non-target plants in the process. These products can also be used very effectively for cut-stump treatments at similar mixtures as the basal bark application. Treat the cut surface in the zone next to the bark where cambium and sapwood is located and remaining bark at the base of the stem. This treatment can be done well-after the cut is made since the oil helps carry the herbicide into the plant. Triclopyr esters may also be used as a foliar spray in water or water and oil emulsions, based on individual product labels. The ester formulation spray applications may have the advantage of penetrating waxy leaves better than amine herbicides.

Herbicide Recommendations for Controlling Invasive Woody Plants, continued...

Metsulfuron Methyl and Imazapyr herbicides have also been used effectively for woody invasive species control, but we have also seen non-target trees and plants severely impacted or even killed by these materials through soil activity. Consider using these herbicides mainly in areas either dominated by invasive species or where the number of invasive plants are low and less herbicide will need to be applied.

Additional Resources:

Indiana Invasive Species Council is a clearing house site for invasive species info:

<https://www.entm.purdue.edu/iisc/>

Purdue Extension Report Invasive website provides links to the many Purdue invasive species publications, videos, and more: <https://ag.purdue.edu/reportinvasive/>

Purdue Forestry and Natural Resources Extension has webinars, videos, and publications available online at: <https://www.purdue.edu/fnr/extension/>

Midwest Invasive Plant Network a regional information center with sections on identification, control, early detection and rapid response, and many other resources. They have a very good control database with effectiveness-rated treatments by species found here: <http://mipn.org/>

Southern Indiana Cooperative Invasive Management has many resources including an invasive plant calendar of control found here: <http://www.sicim.info/>

Landowner Spotlight

Compiled by: Amy Krzton-Presson, Wabash River Enhancement Corporation, Resource Specialist with input from landowner Dr. Lindsey Payne.

Many of us have volunteered at or lead volunteer efforts to remove invasive plants on public lands. In order to make progress to removing invasives in our region, private landowners need to be a part of removing and preventing these species. A landowner we'd like to highlight is a Purdue professor and a community leader, Dr. Lindsey Payne. You can read Lindsey's description of the efforts she put forth to remove honeysuckle on her property below. If you have done work on your property, email us so we can highlight your valuable efforts. Email: TICTaboutinvasives@gmail.com

"We started clearing the honeysuckle out of our 5 wooded acres in December 2019 and are just finishing up the last 1/2 acre. It was heavily infested with honeysuckle. Some of the plants were trees, likely 20-30 years old according to the extension agent. We used the chain saw to cut down the big ones and created piles (pictured.) That pile ran about 200 feet long and about 10 feet tall. We chipped the piles over Thanksgiving in an industrial size wood chipper and created a path. We pulled smaller honeysuckle with a pickaxe before taking down the big ones. This was only the first 2.5 acres. For the last 2.5 acres, we have been using the chain saw on the big ones, letting them lie, then using a pickaxe and pullerbear on the smaller ones. Unfortunately, I think we are going to have to treat this spring/fall as needed since the big ones were just cut down, not pulled out. We are trying to keep this to a minimum, but are feeling a little out of options. We are reforesting the first 2.5 acres in March with trees from the DNR. I have no idea how we are going to get 500 trees planted!"



Picture thanks to Lindsey Payne

TICT Volunteer Callout

Name of the property: Wabash River Enhancement Corporation (WREC) South River Road property

Invasive in need of control: Honeysuckle, garlic mustard, Queen Anne's lace

Property Overview: The Wabash River Enhancement Corporation (WREC) owns a 106-acre natural area along the Wabash on South River Road. The property has a 40 acre grassland that was formerly used as forage for cattle. Since retirement, the grassland has had a somewhat successful return of native flowers, trees, and shrubs. Another 40 acres is deeply dissected by ravines with mature oaks, hickories, walnuts, and sycamores along streams that remind one of hikes through Brown County, Indiana. The south end of the grassland provides a high point in the county and an overlook before the south woods gives a stunning, clear view for miles across the Wabash. But the gem of the property is the fen located just outside of the Wabash's floodplain. Fens are a special type of wetland, formed by continuous ground water. Fens are basic or neutral in pH and have diverse plant and animal populations. Here, we see marsh marigolds and skunk cabbage in early spring with horsetail rush and sedges to keep the fen green through the winter.



Wooded slopes



Marsh marigolds bloom in the fen

WREC was awarded a generous grant from the Roy Whistler Foundation to fund an important stewardship partnership on the property with NICHES Land Trust. Justin Harmeson, a NICHES Land Trust steward, has been leading invasive removal and sugar maple thinning. Together, in the spring of 2021, we will implement prescribed fire in the grassland and south woods to promote native species regeneration and cycle nutrients into the soil.

The property is not currently open to the general public. We plan to open to the public for hiking once safe trails are established and the habitat is in a healthier state. Volunteers can help us reach the goal faster and get a sneak peak of this beautiful place! WREC is hosting monthly volunteer work days on the property to stack cut honeysuckle brush, hand pull garlic mustard and Queen Anne's lace, and remove fencing. During each work day, we'll show volunteers around to our favorite spots on the property.

Callout: Volunteers can assist with the following weekend work days in 2021. Work days go from 10am-1pm: Feb 27, March 27, April 24, May 21, June 25, Sept 25, Oct 22, Dec 10. Sign up on our website:

<http://www.wabashriver.net/volunteer/>

We can also host separate volunteer events for community groups, families, or individuals. If you're interested in assisting Justin and Shannon during the week with special tasks, contact Shannon with your schedule.

Contact: Shannon Stanis, Watershed Coordinator

Email: Watershed@wabashriver.net , Phone: 847-287-6840 (cell)

<http://www.wabashriver.net/volunteer/>

Pictures thanks to Shannon Stanis

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NICHES Land Trust Facebook Page: <https://www.facebook.com/NICHEShelpingecosystemssurvive>

Prophetstown State Park Facebook Page: <https://www.facebook.com/prophetstownsp/>

RIP Squad: <https://www.facebook.com/RIP-Squad-102185094741433>

Volunteer Opportunities & Resources

- **NICHES Garlic Mustard War** NICHES Land Trust, Garlic Mustard War, April--May 2021. Help preserve biodiversity and health at our local nature preserves! NICHES Land Trust will be hosting 30 volunteer garlic mustard pulling shifts between April and May (each shift limited to 12 participants each). To sign up for socially distanced shifts removing garlic mustard send an email to sam@nicheslandtrust.org or text 513-490-5080 with your name, contact info, and the shifts you can make. The location of each shift depends on the work of a previous shift and will be decided closer to the date it will take place. As a rule of thumb, we will aim for nothing more than 50 minutes away from the Lafayette / West Lafayette area. April shifts as follows: SHIFT 1: Friday April 16th, 10am - 12:45pm, SHIFT 2: Friday April 16th, 1pm - 4pm, SHIFT 3: Saturday April 17th, 10am - 12:45pm, SHIFT 4: Saturday April 17th, 1pm - 4pm, SHIFT 5: Sunday April 18th, 10am - 12:45pm, SHIFT 6: Sunday April 18th, 1pm - 4pm, SHIFT 7: Friday April 23rd, 10am - 12:45pm, SHIFT 8: Friday April 23rd, 1pm - 4pm, SHIFT 9: Saturday April 24th, 10am - 12:45pm, SHIFT 10: Saturday April 24th, 1pm - 4pm, SHIFT 11: Sunday April 25th, 10am - 12:45pm, SHIFT 12: Sunday April 25th, 1pm - 4pm, SHIFT 13: Friday April 30th, 10am - 12:45pm, SHIFT 14: Friday April 30th, 1pm - 4pm
- **Prophetstown State Park Planting for the Greenhouses** Combat invasive plants by growing native plants at Prophetstown State Park. Plants grown at Prophetstown SP are used in restoration efforts at the park, supplied to Indiana State Parks across the state, and used in our Native Plant Sale (May 8th, 2021) with all proceeds supporting future greenhouse operations at Prophetstown SP. Planting takes place February 9th-11th, 10am-3pm. Email Jenna at jparks@dnr.in.gov or call (765)320-0503 to sign up for a volunteer planting day. You can sign up for a 2 hour shift (10am-Noon/1pm-3pm) or a 4 hour shift (10am-3pm, 1 hr lunch break.) Space is limited. At this time, social distancing and masks are required.
- **Wabash River Enhancement Corporation (WREC)** invasive species work days. Learn more and sign up here: <http://www.wabashriver.net/volunteer/>
- **Women4theLand** upcoming virtual conservation learning circles on invasive species. Learn more and RSVP here: <https://www.women4theland.org/upcoming-events>



WREC'S TOOL LIBRARY

Clean up your rain garden or prep your site for next year's garden by borrowing from our invasive plant removal tool library. One Pullerbear or two soil knives can be checked out for a week at a time.

[HTTP://WWW.WABASHRIVER.NET/TOOL-LIBRARY/](http://www.wabashriver.net/tool-library/)

**Take advantage of the
Wabash River
Enhancement
Corporation's Tool
Library to tackle
invasive plants on your
property!**

Check it out here:

**[http://www.wabashriver.net
/tool-library/](http://www.wabashriver.net/tool-library/)**