MANAGEMENT OF

INVASIVE PLANTS IN WISCONSIN

A3924-17

Black locust
(Robinia pseudoacacia)

Brendon Panke and Mark Renz

Invasive plants can thrive and aggressively spread beyond their natural range, disrupting ecosystems. The *Management of Invasive Plants in Wisconsin* series explains how to identify invasive plants and provides common management options. Management methods recommend specific timings for treatment, as well as expected effectiveness. For more information, go to: fyi.uwex.edu/weedsci/category/invasive-plants-of-wisconsin.

Black locust is a fast-growing tree that grows up to 90′ tall with mature trunk diameters from 2–4′. Trees can form multiple-stemmed plants that leaf out later in spring than most trees. Seedlings and small branches have paired thorns. Bark is smooth and green on saplings, but dark with deep furrows on mature trees.

Legal classification in Wisconsin: Not regulated

Leaves: Alternate, pinnately compound with 7–21 leaflets, arranged in pairs with one unpaired leaflet at the tip. Leaflets are thin, entire, elliptic, and bluish-green above and pale beneath.

Flowers: Midspring. White, pea-like, and very fragrant. Appear in showy, drooping inflorescences. Flowers are each 1″ long and are found in 5″- long clusters.

Fruits and seeds: Flat, shiny brown pods are 2–6″ long and contain 4–8 seeds. Pods often persist on tree through winter.

Roots: Extensive system of fibrous roots and shallow rhizomes extending from a woody crown.

Similar species: Honey locust (*Gleditsia triacanthos*; native) also has alternate, pinnately compound leaves, but the leaves are sometimes twice pinnately compound and the flowers are yellow-green and not showy.

Ecological threat:

- Invades forests, upland prairies, savannas, pastures, old fields, and roadsides.
- Vigorous vegetative reproduction forms extensive, dense groves of clones.
- Damage to roots or stems (e.g., from fire, wind, cutting, or disease) stimulates vigorous sprouting, root suckering, and lateral spread.
- A native to southern Indiana, Illinois, Ohio, and Missouri, it has been extensively planted and has invaded areas adjacent to where it was introduced.

Non-chemical control

Removal

Effectiveness in season: 70–90%
Season after treatment: < 50%

Most appropriate for seedlings and young trees that have not developed an extensive system of rhizomes. Older stands of trees grow clonally, and unless all plant material is removed, the remaining material will resprout and sucker. Monitoring and management will be required following removal.

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Mowing

Effectiveness in season: 50–70%
Season after treatment: < 50%

Mowing removes above-ground growth of established plants and prevents additional seed production, but rarely kills plants; established plants can persist after mowing for many years. Combining mowing with another technique (such as herbicide) is recommended because of black locust's tendency to resprout. If seeds are present when removed, avoid movement off of the site unless material can be transported without spreading seed to other locations.

Girdling

Effectiveness in season: 70–90%
Season after treatment: < 50%

Effective at suppressing above-ground growth of large trees in locations where the use of herbicides is impractical. Using a hand axe, make a cut through the bark encircling the base of the tree, 6" above the ground. Ensure that the cut goes beyond the cambium layer for effective control. This method will kill only the above-ground portion of the tree; shoots will resprout and require follow-up treatments.

Prescribed burning

Effectiveness in season: 50–70%
Season after treatment: < 50%

Spring burns can kill germinating seedlings and suppress above-ground growth of established plants, depending on fire intensity. After the fire, established plants will quickly and vigorously resprout; this management method is not recommended unless integrated with other techniques. A handheld propane torch can be effective for treating seedlings.

Grazing

Effectiveness in season: < 50%
Season after treatment: < 50%

Grazing can suppress above-ground growth, especially during the middle of the season. Success is dependent on the ability of animals to actively feed on stems and disrupt above-ground growth. Shoots will resprout and require additional management, especially in dense stands. Black locust bark can poison animals if it becomes too great a percentage of their diet. When grazing animals on black locust, ensure that other forages are included in sufficient amounts to prevent any toxicity.

Manipulation of the environment

Effectiveness in season: < 50%
Season after treatment: < 50%

A well-established grass or shrub layer can suppress seedling establishment. Avoid disturbing the soil as this typically favors black locust colonization.

Chemical control

Foliar

Apply directly to individual plants or broadcast across an infested area. Broadcasted foliar applications are typically the most cost-effective treatment in dense infestations. Use lower rates on smaller plants and less dense populations and higher rates on larger plants and denser populations. With larger diameter trees and clones, expect resprouting to occur up to a year after treatment. Monitoring for several years after treatment is critical to successful treatment.

aminopyralid*

Effectiveness in season: 90–100%
Season after treatment: 70–90%

Common name: Milestone

Rate:
broadcast: 7 fl oz/A (0.1 lb a.e./A)
spot: Equivalent to broadcast rates.

Timing: Apply when target species is actively growing and fully leafed out.

Remarks: 14 fl oz/A can be used as long as less than half of the area is treated. Depending on the volume of solution applied per acre, typical mixtures for spot treatments are 2–8 mL Milestone per gallon of water.

Caution: Do not apply directly to water or to areas where surface water is present. Remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

clopyralid*

Effectiveness in season: 90–100%
Season after treatment: 70–90%

Common name: Transline

Rate:
broadcast: 16–21 fl oz/A (0.4–0.5 lb a.e./A)
spot: 0.5–1.5% (0.015–0.05 lb a.e./gal)

Timing: Apply when target species is actively growing and fully leafed out.

Caution: Do not apply directly to water or to areas where surface water is present. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

glyphosate*

Effectiveness in season: 50–70%
Season after treatment: < 50%

Common name: Roundup

Rate:
broadcast: 1.75–3.5 lb a.e./A
spot: For a 3 lb a.e./gal product. 5.0–6.0% (0.15–0.18 lb a.e./gal)

Timing: Apply when target species is actively growing and fully leafed out.

Caution: Use product labeled for aquatic use if potential exists for solution to contact surface waters. Applications can result in bare ground since glyphosate is not selective. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants.

imazapyr*

Effectiveness in season: 70–90%
Season after treatment: 70–90%

Common name: Arsenal

Rate:
broadcast: 32–96 fl oz/A (0.5–1.5 lb a.e./A)
spot: 0.5–2% (0.01–0.04 lb a.e./gal)

Timing: Apply when target species is actively growing and fully leafed out.

Caution: Use product labeled for aquatic use if potential exists for solution to contact surface waters. Applications can result in bare ground since imazapyr is not selective and can remain in the soil for several months to more than a year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants.

metsulfuron*

Effectiveness in season: < 50%
Season after treatment: < 50%

Common name: Escort

Rate:
broadcast: 1–3 oz/A (0.6–1.8 oz a.i./A)
spot: 0.04 oz/gal (0.02 oz a.i./gal)

Timing: Apply when target species is actively growing and fully leafed out.

Caution: Do not apply directly to water or to areas where surface water is present. Remains in the soil for months, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants.

picloram + 2,4-D*

Effectiveness in season: 70–90%
Season after treatment: 70–90%

Common name: Grazon

Some products containing picloram are restricted-use in Wisconsin.

Rate:
broadcast: 128 fl oz/A (picloram: 0.54 lb a.e./A + 2,4-D: 2 lb a.e./A)
spot: Equivalent to broadcast rates.

Timing: Apply when target species is actively growing and fully leafed out.

Caution: Do not apply directly to water or to areas where surface water is present. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Remains in the soil for more than one year, depending on application rate, and has the potential to contaminate surface runoff water during this timeframe. Maintenance of a vegetative buffer strip is recommended between the areas this product is applied and surface water features. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

triclopyr*

Effectiveness in season: 50–70%
Season after treatment: < 50%

Common name: Garlon 4

Rate:
broadcast: 128–256 fl oz/A (4–8 lb a.e./A)
spot: 2–4% (0.08–0.16 lb a.e./gal)

Timing: Apply when target species is actively growing and fully leafed out.

Caution: Use product labeled for aquatic use if potential exists for solution to contact surface waters. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants.

***Active ingredient (a.i.)**

Cut stump

Cut a stem of a plant near the base and apply herbicide to the cut surface that remains rooted in the ground. Apply as soon as possible after cutting, but no later than one hour after cutting. Do not use this method if there is heavy sap flow or if snow covers the cut surface. Use lower rates on smaller plants and higher rates on larger plants. With larger diameter trees and clones, expect resprouting to occur up to a year after treatment. Monitoring for several years after treatment is critical to successful treatment.

aminopyralid*

Effectiveness in season: 90–100%
Season after treatment: 70–90%

Common name: Milestone

Rate: 10% (0.2 lb a.e./gal)

Timing: Apply any time of year.

Caution: Do not apply directly to water or to areas where surface water is present. Remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

aminopyralid + triclopyr*

Effectiveness in season: 70–90%
Season after treatment: 70–90%

Common name: Milestone VM Plus

Rate: 100% (aminopyralid: 0.1 lb a.e./gal + triclopyr: 1.0 lb a.e./gal)

Timing: Apply any time of year.

Caution: Do not apply directly to water or to areas where surface water is present. Aminopyralid remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

clopyralid*

Effectiveness in season: 90–100%
Season after treatment: 50–70%

Common name: Transline

Rate: 50% (1.5 lb a.e./gal)

Timing: Apply any time of year.

Caution: Do not apply directly to water or to areas where surface water is present. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

glyphosate*

Effectiveness in season: 70–90%
Season after treatment: 50–70%

Common name: Roundup

Rate: For a 3 lb a.e./gal product. 20–50% (0.6–1.5 lb a.e./gal)

Timing: Apply any time of year.

Caution: Use product labeled for aquatic use if potential exists for solution to contact surface waters. Applications can result in bare ground since glyphosate is not selective. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants.

imazapyr*

Effectiveness in season: 70–90%
Season after treatment: 70–90%

Common name: Stalker

Rate: 6.0–12.0% in oil (0.12–0.25 lb a.e./gal)

Timing: Apply any time of year.

Remarks: Products containing this active ingredient can have different instructions for mixing. Labels will recommend mixing the product in a water- or oil-based carrier (e.g., basal bark oil). Consult the label to determine the appropriate carrier.

Caution: Use product labeled for aquatic use if potential exists for solution to contact surface waters. Applications can result in bare ground since imazapyr is not selective and can remain in the soil for several months to more than a year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants.

picloram + 2,4-D*

Effectiveness in season: 70–90%
Season after treatment: 70–90%

Common name: Pathway

Some products containing picloram are restricted-use in Wisconsin.

Rate: 100% (picloram: 3%; 2,4-D: 11.2%)

Timing: Apply any time of year.

Caution: Do not apply directly to water or to areas where surface water is present. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Remains in the soil for more than one year, depending on application rate, and has the potential to contaminate surface runoff water during this timeframe. Maintenance of a vegetative buffer strip is recommended between the areas this product is applied and surface water features. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may

cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

triclopyr*

Effectiveness in season: 70–90%
Season after treatment: 50–70%

Common name: Garlon 4

Rate: 20–30% in oil (0.8–1.2 lb a.e./ gal)

Timing: Apply any time of year.

Remarks: Products containing this active ingredient can have different instructions for mixing. Labels will recommend mixing the product in a water- or oil-based carrier (e.g., basal bark oil). Consult the label to determine the appropriate carrier.

Caution: Use product labeled for aquatic use if potential exists for solution to contact surface waters. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants.

triclopyr + 2,4-D*

Effectiveness in season: 70–90%
Season after treatment: 50–70%

Common name: Crossbow

Rate: 4% in oil (triclopyr: 0.04 lb a.e./gal + 2,4-D: 0.08 lb a.e./gal)

Timing: Apply any time of year.

Caution: Do not apply directly to water or to areas where surface water is present. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants.

Hack-and-squirt

Using a hand axe, make cuts every 3–4" around the trunk at 6–18" above the ground at the same level and apply solution into the cut area. Do not use this method if there is heavy sap flow. Use lower rates on smaller plants and higher rates on larger plants. With larger diameter trees and clones, expect resprouting to occur up to a year after treatment. Monitoring for several years after treatment is critical to successful treatment.

aminopyralid*

Effectiveness in season: 90–100%
Season after treatment: 70–90%

Common name: Milestone

Rate: 10% (0.2 lb a.e./gal)

Timing: Apply any time of year.

Caution: Do not apply directly to water or to areas where surface water is present. Remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

aminopyralid + triclopyr*

Effectiveness in season: 50–70%
Season after treatment: 70–90%

Common name: Milestone VM Plus

Rate: 100% (aminopyralid: 0.1 lb a.e./gal + triclopyr: 1.0 lb a.e./gal)

Timing: Apply any time of year.

Caution: Do not apply directly to water or to areas where surface water is present. Aminopyralid remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

clopyralid*

Effectiveness in season: 90–100%
Season after treatment: 50–70%

Common name: Transline

Rate: 50% (1.5 lb a.e./gal)

Timing: Apply any time of year.

Caution: Do not apply directly to water or to areas where surface water is present. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

imazapyr*

Effectiveness in season: 50–70%
Season after treatment: 70–90%

Common name: Stalker

Rate: 6.0–12.0% in oil (0.12–0.25 lb a.e./gal)

Timing: Apply any time of year.

Remarks: Products containing this active ingredient can have different instructions for mixing. Labels will recommend mixing the product in a water- or oil-based carrier (e.g., basal bark oil). Consult the label to determine the appropriate carrier.

Caution: Use product labeled for aquatic use if potential exists for solution to contact surface waters. Applications can result in bare ground since imazapyr is not selective and can remain in the soil for several months to more than a year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants.

***Active ingredient (a.i.)**

Basal bark

Apply herbicide in a ring around the entire stem. Do not use this method if snow or other vegetation obscures the target area. Applications should be made at least 6" wide (6–18") to the base of a woody stem. Ideal for stems ≤ 6" in diameter. Use lower rates on smaller plants and higher rates on larger plants. With larger diameter trees and clones, expect resprouting to occur up to a year after treatment. Monitoring for several years after treatment is critical to successful treatment.

aminopyralid*

Effectiveness in season: 70–90%
Season after treatment: 70–90%

Common name: Milestone

Rate: 0.5–5.0% in oil (0.01–0.1 lb a.e./gal)

Timing: Apply any time of year.

Caution: Do not apply directly to water or to areas where surface water is present. Remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

clopyralid*

Effectiveness in season: 70–90%
Season after treatment: 50–70%

Common name: Transline

Rate: 5–10% in oil (0.15–0.3 lb a.e./gal)

Timing: Apply any time of year.

Caution: Do not apply directly to water or to areas where surface water is present. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

dicamba*

Effectiveness in season: 50–70%
Season after treatment: 50–70%

Common name: Banvel

Rate: 25–50% in oil and water (1–2 lb a.e./gal)

Timing: Apply any time of year.

Remarks: Products containing this active ingredient can have different instructions for mixing. Labels will recommend mixing the product in a water- or oil-based carrier (e.g., basal bark oil) or both. Consult the label to determine the appropriate carrier.

Caution: Do not apply directly to water or to areas where surface water is present. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Rates > 16oz/A (0.5 lb a.e./A) may cause stunting and discoloration of sensitive grasses, such as smooth brome.

imazapyr*

Effectiveness in season: 50–70%
Season after treatment: 50–70%

Common name: Stalker

Rate: 6–9% in oil (0.12–0.2 lb a.e./gal)

Timing: Apply any time of year.

Remarks: Products containing this active ingredient can have different instructions for mixing. Labels will recommend mixing the product in a water- or oil-based carrier (e.g., basal bark oil). Consult the label to determine the appropriate carrier.

Caution: Use product labeled for aquatic use if potential exists for solution to contact surface waters. Applications can result in bare ground since imazapyr is not selective and can remain in the soil for several months to more than a year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants.

triclopyr*

Effectiveness in season: 70–90%
Season after treatment: 50–70%

Common name: Garlon 4

Rate: 20–30% in oil (0.8–1.2 lb a.e./gal)

Timing: Apply any time of year.

Remarks: Products containing this active ingredient can have different instructions for mixing. Labels will recommend mixing the product in a water- or oil-based carrier (e.g., basal bark oil). Consult the label to determine the appropriate carrier.

Caution: Use product labeled for aquatic use if potential exists for solution to contact surface waters. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants.

Girdling

Make a continuous cut around the trunk of the tree, just deep enough to expose the vascular tissue. Do not use this method if there is heavy sap flow or if snow covers the cut surface. Use for trees greater than 4" DBH. Use lower rates on smaller plants and higher rates on larger plants (> 8" DBH). With larger diameter trees and clones, expect resprouting to occur up to a year after treatment. Monitoring for several years after treatment is critical to successful treatment.

aminopyralid*

Effectiveness in season: 70–90%
Season after treatment: 70–90%

Common name: Milestone

Rate: 10% (0.2 lb a.e./gal)

Timing: Apply any time of year.

Caution: Do not apply directly to water or to areas where surface water is present. Remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

aminopyralid + triclopyr*

Effectiveness in season: 50–70%
Season after treatment: 70–90%

Common name: Milestone VM Plus

Rate: 100% (aminopyralid: 0.1 lb a.e./gal + triclopyr: 1.0 lb a.e./gal)

Timing: Apply any time of year.

Caution: Do not apply directly to water or to areas where surface water is present. Aminopyralid remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

clopyralid*

Effectiveness in season: 90–100%
Season after treatment: 50–70%

Common name: Transline

Rate: 10–20% (0.3–0.6 lb a.e./gal)

Timing: Apply any time of year.

Caution: Do not apply directly to water or to areas where surface water is present. Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination. Remains in soil for up to one year, depending on application rate. Overspray or drift to desirable plants should be avoided since even minute quantities of the spray may cause severe injury to plants. Do not compost treated plants since herbicide can persist through composting process.

Herbicide information is based on label rates and reports by researchers and land managers. Products known to provide effective control or in common use are included. Those that do not provide sufficient control or lack information for effectiveness on target species have been omitted.

References to pesticide products in this publication are for your convenience and not an endorsement of one product instead of a similar product. You are responsible for using pesticides in accordance with the label directions. *Read the label before any application.*

UW Extension Cooperative Extension

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