

# Garlic Mustard

(*Alliaria petiolata*)

Photo Credit: Rachel Gagnon

## Best Management Practices Technical Document for Land Managers

March 2025

### - DISCLAIMER -

This document conveys information recommended by leading professionals across Ontario. It contains the most up-to-date information available at the time of publication. It is not intended to provide legal advice. It is subject to change as new information emerges, tools and techniques evolve or as legislation or permitting requirements change. Tailor the timing of control to your region.

The prevention and early detection of garlic mustard is essential for an effective plant management strategy. Use this document after you have assessed your site(s) to help identify control options that are appropriate on your site. An Integrated Pest Management approach is strongly encouraged - which involves using a combination of control tactics (e.g., chemical, manual, mechanical or cultural methods). This technical bulletin is only a summary of practices - for more information on the biology and life cycle of this invasive plant, please refer to the Ontario Invasive Plant Council's Best Management Practices document.

## Strategy and Cautions

- Garlic mustard spreads exclusively through seed production, making the prevention of seed development the top priority for effective control. Efforts should be focused on managing the seed-producing second-year plants to minimize reproduction and limit further spread.
- Remove the outlying populations (isolated plants or satellite populations) first to prevent further spread.
- Pulling plants before or while they are in flower, but before they set seed, is the most effective control method for all populations sizes.
- If garlic mustard roots are damaged but not entirely removed, small buds (called axillary buds) on the roots will sprout additional stems.
- Even if the plants are damaged, they can produce replacement flowers as late as September. Pulled flowering plants, that are left on site, will continue to the seed formation and ripening stage.

**Caution:** Other manual control methods including mowing or cutting, unless combined with chemical control, may increase densities by stimulating growth. These methods are very labour intensive and not effective for long-term control. Make sure that boots, clothing, and all equipment is cleaned at the site to ensure seeds or root fragments are not transported from the site. See the [Ontario Invasive Plant Council's Clean Equipment Protocol](#) for more details.

### Management of Small and Large Populations

Pulling works best for small or large infestations. The entire “s” shaped root must be removed to prevent re-sprouting. Pulling is easiest when the soil is soft and pliable (in early spring (April/May) and after a rain) but must be done continuously throughout the growing season to ensure all stems are removed. Stop all control activities when garlic mustard starts to produce seeds to prevent spreading seeds. If pulling is not an option (for example, in areas where erosion is an issue) cut the stem of the plants at soil level. Repeat this several times throughout the growing season to prevent the plant from flowering and producing seeds.

## Legislation and Permitting Requirements for Garlic Mustard Management

Depending on the location, timing of work, and the type of management activity proposed, permits, approvals or authorizations may be required from municipal, provincial or federal agencies before control can be initiated. Land/vegetation managers are responsible for ensuring that any permits are obtained prior to proceeding. Additionally, if protected species or habitats are present, an assessment of the potential effects of the control project and authorization could be required. Depending on the species and its location, applications should be directed to the appropriate authorities.

The management of pesticides is a joint responsibility of the federal and provincial governments. The federal government’s Pest Management Regulatory Agency (PMRA) is responsible for approving the registration of pesticides across Canada under the Pest Control Products Act (PCPA). **The PCPA requires the user to ensure Canadian registered pest control products are being used according to the most up to date label requirements.** Federally registered pesticide products are assigned one of four product class designations (i.e., Manufacturing, Restricted, Commercial or Domestic). The pesticide class determines who can sell or use the product and the restrictions placed on its use (e.g., requires a license and/or permit). All invasive species control programs will require licensed exterminators to apply pesticides.

Ontario regulates the sale, use, storage, transportation and disposal of pesticides including issuing licenses and permits under the Pesticides Act and Ontario Regulation 63/09. The use of pesticides on land is subject to the Ontario Cosmetic Pesticides Ban. Unless they are certain biopesticides and low-risk pesticides on Ontario’s “Allowable List”, pesticides can only be used as they are permitted under an exception to the ban. Depending on the specifics of the extermination, invasive plant control may be permitted in accordance with exceptions for forestry, agriculture, public health and safety (e.g., plants poisonous to humans by touch and plants that affect public works and other buildings and structures) and compliance with other legislation (e.g., control of noxious weeds where required by the Weed Control Act). There is also an exception for the management, protection, establishment or restoration of a natural resource that may be considered if other exceptions do not apply. Ontario Regulation 63/09 specifies requirements for pesticide use under each exception and may include conditions such as a letter from the relevant Ministry (MNRF or MECP) and/or others. The licensed exterminator can provide guidance on applicable extermination requirements. **For information on obtaining a license or a permit refer to the Ministry of the Environment, Conservation and Parks website at [www.ontario.ca/page/pesticide-licences-and-permits](http://www.ontario.ca/page/pesticide-licences-and-permits).**

## Herbicide Selection and Application

Please note: Garlic mustard can be successfully controlled by consistent hand-pulling over several years. Chemical control is rarely recommended or needed to control this invasive plant. Chemical control may be a viable option in the spring for large areas of basal rosettes before plants flower and the area is too large to control through hand pulling.

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## Garlic Mustard Treatment Times

Hand Pulling	J	F	M	A	M	J	J	A	S	O	N	D
Chemical (Foliar)	J	F	M	A	M	J	J	A	S	O	N	D

No Treatment

Optimal Treatment Times

Suboptimal Treatment Times

**Note: The above treatment times for herbicide application must consider weather conditions.**

## Disposal

Do not compost viable plant material (seeds and roots) at home or send them to a landfill. Pulled plants that have flowered are still able to produce seeds, so viable plant pieces should be removed and solarized. If your municipality has a high-heat compost program, plants can be sent there. Ontario composting facilities are required to routinely monitor the compost process and meet strict, provincially regulated time-temperature parameters for pathogen kill. Consult your local municipality to determine if this is an appropriate course of action. Alternatively, solarize viable plant material by placing it in sealed black plastic bags and leaving it in direct sunlight for 1-3 weeks. Plant material can also be placed in yard waste bags, covered with a dark-coloured tarp and left in the sun for 1-3 weeks. Allow stems and roots to dry thoroughly before burning or disposing of them.

## Rehabilitation and Monitoring

Garlic mustard invades disturbed areas readily and soil disturbances, such as pulling out plants, stimulates seed germination. Rehabilitation of disturbed areas is therefore vital for long-term control. Because garlic mustard roots produce chemicals that change the soil chemistry and prevent other species from growing nearby (allelopathy), soil rehabilitation may be required before re-planting. It is important to seed or plant native plant species that have been shown to out compete garlic mustard. See the Ontario Invasive Plant Council's Best Management Practices document for details. Experts estimate that garlic mustard seeds are viable for at least 7 years. Follow-up monitoring and removal of new growth during this time period is necessary for complete control.