

# Common Buckthorn

(*Rhamnus cathartica*)

Photo Credit: Valley Conservation

## Best Management Practices Technical Document for Land Managers

June 2024

### - 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 common buckthorn is essential for an effective plant management strategy. Use this document after you have assessed your site(s) to help identify appropriate control options. An Integrated Pest Management approach is strongly encouraged, which involves using a combination of control tactics (e.g., herbicide application, cutting, and prescribed burns). 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. Common buckthorn is listed as a Noxious Weed under the Weed Control Act.

## Strategy and Cautions

- Remove the outlying populations (isolated plants or satellite populations) and the most prolific seed producers (female plants) first to prevent further spread.
- Small populations ( $\leq 300 \text{ m}^2$ ) of small plants ( $\leq 5 \text{ cm}$  in diameter) can be removed manually.
- Large populations of seedlings or young trees for which pulling is not practical can be treated with a foliar application of a systemic herbicide.
- Large trees ( $> 5 \text{ cm}$  in diameter) should be cut at the base and stump-treated with a systemic herbicide. Alternatively, the standing stems can be sprayed with a systemic herbicide (basal bark application). These stems can either be left standing or cut down once dead.

**Caution:** Because of the thorns, it is recommended that protective clothing, including gloves and safety glasses, be worn when conducting manual control. Re-sprouting can be considerable after a failed control attempt. Cutting and not applying systemic herbicides leads to increased work due to multi-stem regrowth. 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 Populations ( $\leq 300 \text{ m}^2$ ) and Saplings ( $< 5 \text{ cm}$ Diameter)

Small populations of small plants (up to 1 m tall) can be hand-pulled any time of the year. Small populations of plants 1- 5 cm in diameter can be removed using a weed pulling tool. Plants under 1 cm can be hand pulled without the use of a tool. However, gloves are recommended. Remove as much of the root mass as possible to prevent re-sprouting. Disturbed soil will result from these techniques and should be tamped down or covered in a thick layer of mulch to reduce new buckthorn seedling germination. Manual control is easiest after rain when the soil is soft and pliable. If possible, cut off branches with berries in the summer, before the berries ripen and fall off. Then come back in the fall and pull out the cut stems. Common buckthorn leaves remain green longer than most native plants, which makes identification easier into the late fall, allowing for manual control until the ground freezes. This reduces disturbance to surrounding plants that have gone dormant.



Photo: Credit Valley Conservation

### Management of Large Populations (>300 m<sup>2</sup>) and Large Trees (>5 cm Diameter)

When manual control is no longer an option, chemical control is the most effective method for managing large populations. Foliar application of a systemic herbicide is recommended for leaves of small trees. Large trees (>5cm) can be cut and the stumps treated with a systemic herbicide. Alternatively, the standing stems can be sprayed with a systemic herbicide (basal bark application). These stems can either be left standing or cut down once dead. Systemic herbicides must be translocated to the roots to be effective. Some herbicides must be applied during the growing season, therefore read the labels to determine appropriate application times. Herbicide drift may prohibit pesticide use near water. At the time of publication, a bioherbicide is available for the control of common buckthorn and is an alternate treatment option for large populations and large trees. It is effective at inhibiting the resprouting and regrowth from cut stumps. This product must be applied to the plant when it is fully leafed out and must be applied to the cambium layer (inner bark) of freshly cut stumps and girdled trees because it does not translocate through the bark. Plant death occurs over three years.

## Legislation and Permitting Requirements for Common Buckthorn 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 any permits are obtained prior to proceeding. Also, if protected species or habitats are present, an assessment of the control project’s potential effects 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*. **The PCPA requires the user to ensure Canadian registered pest control products are being used according to the most up to date label requirements.** 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*. 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 plant control programs require licensed exterminators to apply pesticides.

The use of pesticides on land is subject to the *Ontario Cosmetic Pesticides Ban*. Unless they are certain biopesticides and low-risk products on Ontario’s “Allowable List”, pesticides can only be used if 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 and natural resource. See Table 1 for more details. *Ontario Regulation 63/09* specifies requirements for pesticide use under each exception and may include conditions such as a letter from the relevant Ministry (MNR or MECP) and/or others. A licensed exterminator can provide guidance applicable to 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).**

**Table 1: Exceptions to the *Ontario Cosmetic Pesticides Ban* which may be applicable for control of common buckthorn in terrestrial environments.**

<b>Forestry</b>	This plant aggressively invades hardwood (deciduous) and softwood (coniferous) forests and its allelopathic properties prevent native plants from growing. This exception applies to treed areas greater than 1 hectare.
<b>Agricultural</b>	This plant can host agricultural pests such as oat rust, crown fungus, alfalfa mosaic virus and the soybean aphid. It is also listed as a <i>Noxious Weed</i> under the <i>Weed Control Act</i> .
<b>Natural resource:</b>	This plant outcompetes native species, alters soil conditions and prevents regeneration of native tree species.

For more information on these exceptions and applicable procedures, please refer to the Ontario Invasive Plant Council’s Best Management Practices document for this species.



Photo: Credit Valley Conservation

## Herbicide Selection and Application

Pesticide applications can be an effective method for common buckthorn management when used as part of an integrated pest management program and in consideration of common buckthorn biology and site-specific information. Pesticides must be applied in accordance with the federal [Pest Control Products Act](#), [Ontario's Pesticides Act](#), [Ontario Regulation 63/09](#) and all label directions. Most invasive species control programs using a pesticide will require an appropriately licensed exterminator. The availability of pesticides to control common buckthorn may change over time, as may the label directions on how to use the pesticide so that it does not endanger human health or the environment.

Before using any pesticide, ensure you have the most current label. Pesticide labels can be accessed using the [PMRA's label search tool](#), which can be found by searching "PMRA label search" in any internet search engine. Always read and follow all directions on the label. The label is a legal document that must be followed exactly, including any applicable buffer zones. Using a pesticide to treat a species not listed on the label, or in a manner other than that specified on the label violates the [Pest Control Products Act](#) and may incur penalties.

Professionals consulted at the time this document was written recommend using glyphosate-based or triclopyr-based herbicides when their use is approved by the pest control product label. A herbicide needs to be applied annually until all remaining buckthorn plants are gone, the seedbank is exhausted and/or other vegetation is sufficiently established.

**Table 2: Chemical control techniques recommended by experts for common buckthorn at the time this document was written.**

Chemical Control Method	Chemical	Timing and Application
Foliar	Glyphosate	Spring and summer. Must have growing leaves present to be effective. For large populations of seedlings and saplings (<0.5 cm diameter).
Cut Stump	Glyphosate	Spring, summer or fall. Apply immediately following cut. Follow herbicide label instructions regarding temperatures at which the herbicide can be applied. Do not apply herbicides during times of heavy sap flow (early spring).
	Triclopyr	All year. Follow herbicide label instructions regarding temperatures at which the herbicide may be applied. Can be applied to stumps days to weeks after cutting.
Basal Bark	Triclopyr	All year. Follow herbicide label instructions regarding temperatures at which the herbicide may be applied. Apply chemical all the way around the stem in a 30 cm high strip. On small stems (<8 cm), the chemical can be applied to one side.

Please read the most up-to-date label in full before use. Some of the product labels belonging to these active ingredients may not be currently approved for the referenced use and/or may not be approved moving forward if label is amended.

## Bioherbicide for the Control of Common Buckthorn

Bioherbicides are weed-control products whose active agent is a microorganism that exhibits growth-suppressive traits towards invasive plants. In Canada, one bioherbicide option is approved for the control of common buckthorn. The active ingredient in this bioherbicide is *Chondrostereum purpureum*, a naturally occurring fungal pathogen. This organism releases an enzyme that causes silver leaf disease. This bioherbicide is effective at inhibiting the resprouting and regrowth from cut stumps. This product does not translocate, must be applied when the plant is fully leafed out and must be applied to the cambium layer (inner bark) of freshly cut stumps or girdled trees. It is not approved for use near water and can impact certain species of nearby non-target tree species if they have open wounds. Use the [PRMA label search tool](#) to find the most updated product label. This product takes three years following the initial application to become fully effective.



Photo: Credit Valley Conservation

## Common Buckthorn Treatment Times

Hand Pulling or Digging	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
Chemical (Cut Stump)	J	F	M	A	M	J	J	A	S	O	N	D
Chemical (Basal Bark)	J	F	M	A	M	J	J	A	S	O	N	D
Bioherbicide (Cut Stump or Bark Removal down to the cambium layer)	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, location, and the plant growth stage.**

## Disposal

Do not compost viable plant material (fruits, seeds and roots) at home or send to landfill. Viable plant material must be solarized before disposal by placing it in sealed black plastic bags and leaving them in direct sunlight for 1 – 3 weeks. Plant material can be sent to large-scale municipal composting facilities where the compost pile reaches temperatures high enough to kill living plant material. 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. When seedlings or young shrubs are pulled, they should be disposed of in a manner that will ensure that their roots will dry out completely. When feasible, it is advised to remove limbs containing dense clusters of berries. The remaining biomass can be sent to municipal composting facilities while the seed-containing berries are best disposed of after solarization at the landfill. Alternatively, dried branches and stems (without fruits) can be safely incinerated, for example in burn barrels or fire pits, where local bylaws permit. Buckthorn makes excellent firewood. Common buckthorn can also be disposed of through chipping. It is important to ensure all fruit has been removed or you are only doing so with male trees.

## Rehabilitation and Monitoring

Control is much more successful when heavily infested areas, often with seed-saturated soil seedbanks, are re-planted with native trees, shrubs, and plant species that can compete with new buckthorn growth. See the Ontario Invasive Plant Council's Best Management Practices document for more details. Follow-up monitoring and removal of new growth is crucial for successful control. Common buckthorn seeds can remain viable in the soil for up to 5 years.