

Purple Loosestrife

(*Lythrum salicaria* L.)

Best Management Practice Technical Document for Land Managers

March 2017

- DISCLAIMER -

The intent of this document is to relay specific information relating to invasive plant control practices that have been advised by leading professionals across Ontario. This document contains the most up-to-date research and knowledge available at the time of publication and reflects current provincial and federal legislation regarding pesticide usage. It is subject to change as legislation is updated or new research findings emerge and is not intended to provide legal advice. The timing suggested will differ throughout Ontario and should be tailored to your region.

Use this document after you have performed monitoring, assessed your priority areas and made sure that the control options listed in this document are allowed and appropriate on your site. For more information, please refer to the Ontario Invasive Plant Council's Best Management Practices document for purple loosestrife.

Strategy and Cautions

- Remove the outlying populations (isolated plants or satellite populations) first to prevent further spread.
- In general, non-biological control methods provide only short term results.
- Small populations (≤ 50 plants) can be controlled by repeated pulling or careful digging.
- Large populations (> 50 plants) are most effectively managed using biological control.

Management of Small Populations (≤ 50 plants)

Hand pulling is most effective when a stand is under two years old. Digging is more effective for larger plants. Plants are most easily removed when the soil is moist. Removal can be performed throughout the summer and even when the plant is in flower, but must be done before it goes to seed (early August). The entire root system must be removed from the soil to prevent re-sprouting and all plant material must be carefully disposed of (see below).

Mechanical method such as digging or pulling brings thousands of seeds to the soil surface, encouraging germination. Mechanical methods must be performed gently to avoid this. Mechanical methods may need to be repeated for many growing seasons to achieve long-term control.

Management of Large Populations (> 50 plants)

Large populations are most effectively controlled using a biological control.



Approved Biological Control for Purple Loosestrife in Canada

Biological control (the use of a herbivore, predator, disease or other natural enemy to reduce established populations of invasive species) is species-selective and can provide long-term control. Classical biological control aims to re-establish an ecological balance between the introduced species and its natural enemies by selecting highly host-specific natural enemies from the invasive's country of origin, and moving them to the country where the invasive species is a problem. This is only done after extensive host-range testing in the country of origin or in quarantine, to ensure that the potential biocontrol agent is host-specific to the targeted invasive. Once established, the biocontrol agents will form self-perpetuating populations and can spread throughout and beyond the invaded region, thus minimizing recurring acquisition, rearing, and reintroduction costs. In Canada the biological control agent research and approval process is managed by the federal government.

Of over 120 potential biocontrol agents examined for purple loosestrife, four were found to be suitable and were released in North America in the 1990s. The black-margined loosestrife beetle (*Neogalerucella californiensis*) has been the most successful species, as it has become widely dispersed from the original release sites, and is the dominant species of the four in most regions of Ontario.

There are many factors to consider when using biocontrol agents in the management and control of purple loosestrife, such as whether to purchase agents or collect them yourself, timing, frequency and number of releases, optimal placement of the beetles, and number of insects to release. For detailed guidance and tips on developing, implementing and managing a purple loosestrife biological control program, including rearing, purchasing, handling and releasing biocontrol agents, references such as the *Biology and Biological Control of Purple Loosestrife* by Wilson *et al.* (2004) are available. In Ontario, *Neogalerucella* beetles can be purchased from Ontario Beetles. This company has managed purple loosestrife biological control initiatives in Ontario for more than 25 years, conducting research, releasing biocontrol agents, developing management strategies and providing consultation on all aspects of purple loosestrife control. More resources and information can be found on the website www.ontariobeetles.ca.

Disposal

Do not compost viable plant material (flowers, seeds, stems and roots) at home or send to landfill. If your municipality has a high-heat compost program, plants can be sent there. Alternatively, solarize viable plant material by placing it in sealed black plastic bags and leaving them in direct sunlight for 1-3 weeks. Alternatively, place in yard waste bags, cover with a dark-coloured tarp and leave in the sun for 1-3 weeks.

Rehabilitation and Monitoring

Control is often more successful when heavily infested areas are re-planted with native tree, shrub and plant species that are able to outcompete new growth. Follow-up monitoring is crucial. Consult the Ontario Invasive Plant Council's Best Management Practices document for more details. Control measures may need to be repeated for five years or more. Remove purple loosestrife seedlings as they appear.

Reference

Wilson *et al.*, 2004. *Biology and Biological Control of Purple Loosestrife*. Forest Health Technology Enterprise Team. Morgantown, WV.
