TechLine
INVASIVE PLANT NEWS
INNOVATIVE RESEARCH, SUCCESS STORIES, AND TIPS FOR INVASIVE PLANT MANAGERS

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Purple loosestrife (*Lythrum salicaria L.*) is a perennial, rhizomatous forb that invades riparian areas and other waterways throughout most of the U.S. and southern Canada (Figure 1). The plant was first introduced into North America in the early 1800s as an ornamental and subsequently escaped cultivation. It is currently reported in all U.S. states, except Florida and Hawaii, as well as in nine Canadian provinces.

Purple loosestrife spreads primarily from seed, but new plants can also establish from root fragments and stem cuttings. Aerial shoots arise in spring from buds at the top of the root crown and can grow to more than 8 feet in height. Stems are square-shaped, five- or six-sided, and can be either smooth or covered with downy hairs. Bright rose to purple flowers are the most identifiable characteristic of the plant. Flowers are arranged on a spike, which can be a few inches to 3 feet long (Figure 2). The seed capsule is two-celled and contains very small seeds, with individual plants producing about 2.7 million seeds. Root crowns can spread to about 20 inches in diameter in a mature plant.

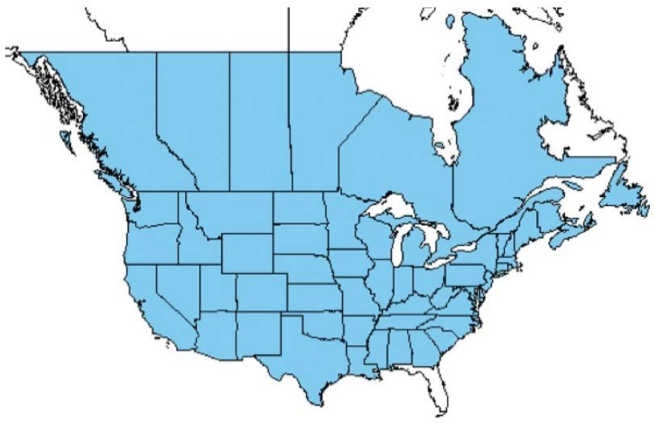

FIGURE 1: Distribution of purple loosestrife in Canada and the United States. *Adapted from USDA, NRCS Plants and Wilson et al.*

ABOUT TECHLINE

TechLine Invasive Plant News aims to provide an objective communication tool for on-the-ground natural resource managers who face common management challenges so they may share the successes of their programs and learn from one another.

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FIGURE 2: Flowers are bright rose to purple and are the most identifiable characteristic of the plant. They are arranged on a spike. *Photo by Steve Dewey, Utah State University, Bugwood.org.*

FIGURE 3: Purple loosestrife control with Rodeo® at 6 quarts per acre (top) compared to Milestone® at 7 fluid ounces per acre (above). Both treatments provided good control of purple loosestrife, but Rodeo damaged desirable grasses. *Photo by Dow AgroSciences.*

Management

Successful management of purple loosestrife requires integrating various control methods. Pulling and digging can be effective on individual plants that are not well established. Selective herbicides alone and in combination with biological control agents can effectively contain and control established infestations.

Herbicides

Field studies conducted on purple loosestrife show that Vastlan® specialty herbicide at 1 to 1.5 percent solution (4 to 6 quarts of Vastlan per acre) will provide good control of loosestrife for up to one year following application (Table 1).

A non-ionic surfactant approved for use in aquatic environments should be added to the spray mixture at 0.25 percent volume to volume (1 quart in 100 gallons of water).

Purple loosestrife often establishes and flourishes on non-irrigation ditches and seasonally dry wetlands. On these sites, Milestone® specialty herbicide applied at 7 fl oz/A, or at the spot treatment rate of 14 fl oz/A, will provide good to excellent control for a year or more after application (Table 1). The addition of 1 pint per acre of 2,4-D with Milestone at 7 fl oz/A provides additional control.

Rodeo® at 1 to 1.5 percent solution (4 to 6 quarts Rodeo per acre) will control purple loosestrife (Table 1). **However**, it is important to note Rodeo is non-selective and will injure or kill desirable grasses (Figure 3). Vastlan and Milestone are selective herbicides that will control broadleaf plants but **will not kill** cattail or desirable grasses at the recommended application rate.

Herbicides should be applied at the bud to mid-flower growth stage. Plant foliage should be thoroughly wetted with the herbicide solution during application. Follow-up applications will be needed a year after treatment to control seedlings and any regrowth that may occur from mature crowns.

Purple loosestrife is often difficult to locate until the plant blooms. Clipping, bagging and removing flower heads from the infested site may be necessary to stop seed production at mid-flower growth stage and beyond.

Biological Control

Biological control agents alone and in combination with herbicides can be used on large, well-established purple loosestrife infestations.

Herbicide	% Solution[2]	Rate/Acre	%Control	
			64-80 DAA	377 DAA
Milestone	0.05	7 fl oz/A	91	90
Milestone	0.1	14 fl oz/A	93	95
Vastlan	1-1.5	4 to 6 qts/A	80	74
Rodeo	1.5	6 quarts/A	85	85

TABLE 1: Percent purple loosestrife control with Milestone® or Vastlan® specialty herbicides, compared to Rodeo® herbicide the season of application and one year following application.[1] (DAA=Days After Application)

1. *Data averaged from two field trials for 64-80 DAA; and from one site 377 DAA. Total application volume ranged from 30 to 50 gallons per acre.*
2. *Percent solution is based on "spray to wet" total application volume of about 100 gallons per acre.*

Four species of beetles were introduced into the U.S. and Canada to control purple loosestrife. *Galerucella pusilla* and *G. calmariensis* are leaf-eating beetles that affect growth and seed production by feeding on leaves and new shoot growth of purple loosestrife plants. *Hylobius transversovittatus* is a root-boring weevil that deposits its eggs in the lower stem of purple loosestrife plants. The flower-feeding weevil, *Nanophyes marmoratus*, reduces seed production of purple loosestrife. The two *Galerucella* spp. have been the most successful of the four agents in establishing and reducing purple loosestrife density in the U.S.

Long-Term Management and Treatment

Loosestrife produces a vast quantity of seed that can germinate following herbicide application. Once the original infestation is controlled, new plants must be managed for several years. Long-term monitoring, vigilantly controlling newly emerging plants, and encouraging a desirable plant community will reduce reinvasion potential of purple loosestrife.

References

Dow AgroSciences Unpublished Field Data.

Lym, R. 2008. Purple loosestrife control with aminopyralid applied alone or with 2,4-D or triclopyr. Western Society of Weed Science Research Progress Report. ISSN-0090-8142. Pp 139-140.

Merentz, Joe. USDA-APHIS, Personal communication. January 2018.

Nelson, LS, KD Getsinger, and JE Freedman. (1995) Selective Control of Purple Loosestrife with Triclopyr. Wetlands Research Program Technical Report WRP-SM-4.

Peterson, Vanelle. Field Scientist (retired). Dow AgroSciences.

Wilson, LM, M Schwarzlaender, B Blossey and CB Randall. Biology and Biological Control of Purple Loosestrife. Forest Health Technology Team. Online bugwoodcloud.org/resource/files/6225.pdf .

USDA, NRCS. 2018. The PLANTS Database (plants.usda.gov, 2 January 2018). National Plant Data Team, Greensboro, NC 27401-4901 USA.