

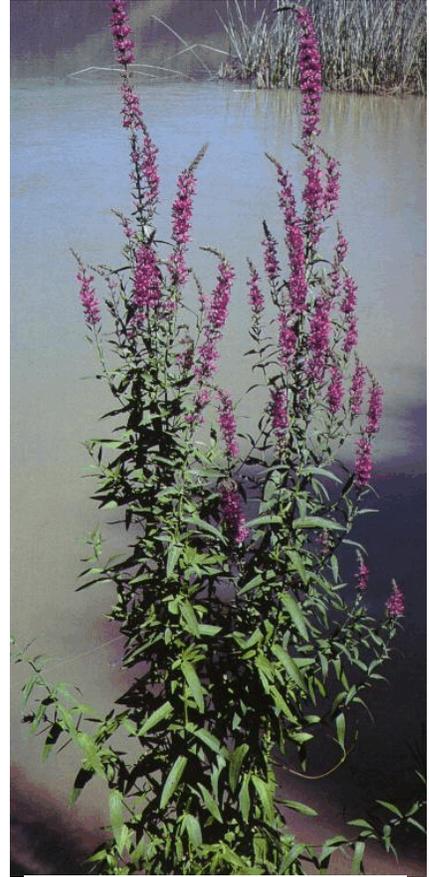
PURPLE LOOSESTRIFE

(*Lythrum salicaria*)

Description: Purple loosestrife or purple lythrum is a member of the Lythraceae or loosestrife family. The plant often sends up multiple stems that can range in height from 6 to 8 feet. The stems are four to eight sided and can either be smooth or pubescent. The erect stems are tough and often appear to be woody at the base of the plant. Leaves are simple, entire, and can be opposite or whorled. Purple loosestrife flowers are arranged on a spike that is from 2 inches to 3 feet long. Individual flowers have five to seven petals that arise from a cylindrical green tube. Petals of the flower are typically purple but can range from white, to pink, or to red. Purple loosestrife seeds are light tan, angular, and 1/32 of an inch in size.

Purple loosestrife is considered a noxious weed under North Dakota state law, thus landowners are required to eradicate or control the spread of the plant.

Plant Images:



Purple loosestrife



Young plant



Leaves



Flowers

Distribution and Habitat: Purple loosestrife was introduced into America from Eurasia. The plant is commonly associated with aquatic sites that include streambanks, shorelines, and wetland areas such as cattail marshes, sedge meadows, and open bogs. Purple loosestrife prefers high organic soils, but can establish on a wide range of soils including clay, sand, muck, and silt.

Life History/Ecology: Purple loosestrife is a stout, rhizomatous, erect perennial forb. The plant reproduces primarily by seed, but can also spread vegetatively from stem cuttings. Seedling

establishment occurs in late spring and early summer when temperatures are high. The taproot of the plant is strongly developed in the seedling stage and persists throughout the life of the plant. After maturity, the taproot and major root branches become thick and woody. Purple loosestrife begins to flower in early July and continues to mid-September in North Dakota. Seed production can be estimated at 2.7 million seeds produced per plant. Seed viability is extremely high; 100 percent for new seeds and 80 percent after two to three years of submergence.

History of Introduction: Purple loosestrife was introduced from European and Asian areas, although the exact geographical origins are unknown. The plant was introduced into North America from Europe in the early 1800s as an ornamental and a contaminant of ship ballast. Purple loosestrife was added to the North Dakota Noxious Weed List in 1996. North Dakota law requires that all purple loosestrife plants be removed to prevent the plant from becoming a major weed problem in wetlands throughout the state. Purple loosestrife has been reported in Barnes, Burleigh, Cass, Dickey, Foster, Golden Valley, Grand Forks, Kidder, McHenry, McKenzie, Mercer, Morton, Nelson, Ramsey, Ransom, Renville, Richland, Rolette, Sargent, Stark, Stutsman, Towner, Trail, Walsh, Ward, and Williams counties in the state of North Dakota.

Effects of Invasion: Purple loosestrife is a prolific seed producer that is capable of growing in wetlands to upland sites with moist to wet soils. Purple loosestrife reduces the diversity of native wetland ecosystems with infestations that lead to a severe wildlife habitat degradation and loss of species diversity. The plant displaces wildlife supporting native vegetation such as bulrushes and cattails. Muskrats cannot use roots of the plant for food or shelter and songbirds do not eat the small seeds. Purple loosestrife affects waterfowl by eliminating nest sites and open water. The thick matted root system of the plant can rapidly fill irrigation ditches, causing a decrease in water flow and an increase in maintenance. Water flow in ditches and canals can also be impeded.

Control:

Management objectives for purple loosestrife control should involve eradicating populations, containing populations, or preventing establishment. Land managers should focus on eliminating small, more recently established populations first because large, well-established populations will have a buildup of persistent purple loosestrife seeds in the soil seed bank. Therefore, preventing seed production and seedling establishment is important because seeds can remain viable in the soil for several years. Control methods should be combined into an integrated management system for the best long-term control of the plant.

Mechanical - Hand pulling can be feasible on small infestations of purple loosestrife if all roots and underground stems of the plant are removed. The area should be monitored for several growing seasons to ensure the plant does not re-establish. Cutting purple loosestrife stems or flowers can prevent seed production, but plants may be able to regrow vegetatively. Flooding, by raising water levels for an extended period of time, may reduce purple loosestrife and may be enhanced by cutting stems of the plant prior to the flooding event. However, the change in water levels may also increase the area where purple loosestrife seeds can germinate, grow, and produce seeds, thus producing new infestations. Burning is thought to not be an effective control method because purple loosestrife is typically found in a wet soil condition and the rootstock of the plant is well-protected. Further research is needed to determine the effects of prescribed burns for purple loosestrife control.

Chemical - Several herbicides are registered for purple loosestrife control. Precautions should be taken along streams or marshy areas. Glyphosate and triclopyr are commonly used in North Dakota for purple loosestrife control. Glyphosate can provide good control of purple loosestrife when applied from July to

early September. Glypro Rodeo, a trade name of glyphosate, can be used in water. Triclopyr will provide good to excellent purple loosestrife control when applied during the pre-to early-flower to late-flower growth stage. Garlon 3A, triclopyr, is labeled for use in wetland sites.

Contact your local county extension agent for recommended use rates, locations, and timing.

Biological - Three biological control agents have been released in North Dakota to control purple loosestrife. These agents include *Hylobius transversovittatus*, a root-mining weevil, and *Galerucella pusilla* and *Galerucella californiensis*, leaf-feeding beetles. The *Galerucella* spp. have been the most successful in controlling the plant. Adults and larvae feed on the buds and foliage of the plant, resulting in stunted plants and reduced seed production. However, in North Dakota, mosquito control programs have kept the *Galerucella* spp. from becoming well established on infestations in urban areas.

Grazing is not effective in controlling purple loosestrife infestation. Cattle, sheep, and goats tend to not feed on the plant.

References:

- Kadmas, T. and W. S. Johnson. 2002. Managing purple loosestrife. Univ. of Nevada Coop. Ext. Ser. Circ. FS-02-58. Reno, NV.
- Lym, R. G. 2004. Identification and control of purple loosestrife (*Lythrum salicaria* L.). North Dakota State Univ. Ext. Ser. Circ. W-1132 (revised). Fargo, ND.
- Mitich, L. W. 1999. Purple loosestrife, *Lythrum salicaria* L. Weed Technol. 13:843-846.
- Mullin, B. H. 1998. The biology and management of purple loosestrife (*Lythrum salicaria*). Weed Technol. 12:397-401.
- Mullin, B. 1999. Purple loosestrife. p. 298-307 In R. L. Sheley and J. K. Petroff. Biology and Management of Noxious Rangeland Weeds. Corvallis, OR: Oregon State University Press.
- Munger, G. T. 2002. *Lythrum salicaria*. In: Fire Effects Information System [Online]. U. S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/> (February 2005).
- Thompson, D. Q., R. L. Stuckey, E. B. Thompson. 1987. Spread, impact, and control of purple loosestrife (*Lythrum salicaria*) in North American wetlands. U. S. Fish and Wildlife Service. 55 p. Jamestown, ND: Northern Prairie Wildlife Research Center Home Page. [Online.] Available: <http://www.npwrc.usgs.gov/resource/1999/loosstrf/loosstrf.htm> (Version 04JUN99). (September 2004).
- Young, J. A. and C. D. Clements. 2001. Purple loosestrife (*Lythrum salicaria*) seed germination. Weed Technol. 12(2):337-342.
- Purple loosestrife, leaves, flowers photographs courtesy Weeds of the West, Tom Whitson.
- Young plant photograph courtesy of Virginia Tech Weed Guide.