



Managing Purple Loosestrife

Purple loosestrife (*Lythrum salicaria*) was first brought to the U.S. from Eurasia by early settlers and grown for its medicinal uses, ornamental qualities, and pollen-bearing capabilities (beekeepers). A major route of entry into U.S. waterways was unintentional transport in ship ballast. Known for its striking and prolonged floral display, this plant is still popular with gardening enthusiasts. But don't let its beauty fool you! Purple loosestrife is listed as a Noxious Weed in PA, and for good reason. It threatens our wetlands and waterways with dense, monotypic stands that eliminate biodiversity, and have little value as wildlife habitat.

A Closer Look At Loosestrife

Loosestrife is an herbaceous perennial that thrives as an emergent plant along shorelines and in ditches, but also grows in sites that are not saturated (Figure 1). Typically this plant is found in full sun, but can tolerate some shade.

The most recognizable feature of loosestrife is the lavender flower spike that persists for weeks on top of the 2 to 7 foot tall stems. Loosestrife is characterized by a square stem; and opposite or whorled, narrow leaves with smooth margins that attach directly to the stem (no petiole, or leaf stalk) (Figure 2). It has a strongly developed taproot with major branching that becomes woody and effectively anchors the plant. The multiple flowering stems and abundance of flowers are responsible for the tremendous amount of seed this plant produces. Seed production estimates vary, but over 100,000 seeds per plant is realistic.

There are several desirable plants of wet areas that look similar to loosestrife. Fireweed (*Epilobium angustifolium*) has



Figure 1: Purple loosestrife occupying drainage swales in a roadside setting. This plant likes 'wet feet' and takes advantage of sites that are occasionally flooded.



Steve Dewey, Utah State Univ. UGA 1459315

Figure 2. Purple loosestrife is characterized by a square stem and opposite or whorled, narrow leaves that attach directly to the stem without a petiole, or leaf stalk. The magenta flower spikes bloom for an extended period of time and ripen from the bottom-up.

narrow leaves and a prominent spike-like flower head, but the leaves alternate on the stem. Blue vervain (*Verbena hastata*) and American germander (*Teucrium canadense*) have square stems and opposite leaves with purplish flower spikes, but their leaves are stalked and have toothed margins. The blazing stars (*Liatrus* spp.) have pink-to-magenta flower spikes and narrow, stalkless leaves, but the leaves alternate on the stem.

Purple loosestrife spreads readily. The buoyant seeds can be distributed over great distances by water. Wind, animals, and people are also responsible for the movement of these tiny seeds. Seeds are highly viable and can lie dormant in submerged soil for years and develop during dry periods when water levels recede. The crown atop the branched taproot continues to expand, producing more stems each growing season.

Control Strategies

Although it's typically an aquatic or wetland plant, loosestrife will grow under a variety of soil conditions from wet to dry. Plants usually occur on terrestrial sites due to



This publications development and printing was supported in part by a grant from the U.S. Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS) Harrisburg, PA. This work was sponsored by the Pennsylvania Association of Resource Conservation & Development (RC&D) Councils and U.S. Department of Agriculture, Farm Services Agency (USDA-FSA) Harrisburg, PA.
 USDA and Pennsylvania Association of RC&D Councils are equal opportunity providers and employers.



receding water levels or expansion of stands from nearby wet areas.

Purple loosestrife can be difficult to control because it usually occurs in or at the fringe of wetland or aquatic settings. While these are not insurmountable obstacles, they are beyond the 'comfort zone' of many applicators and land managers.

Small infestations can be dealt with by hand pulling. You would only want to attempt this in saturated soil, as loosestrife is well rooted. It is imperative to remove as much of the root system as possible, as large root pieces are capable of generating new shoots.

Mowing or cutting the above ground portions of the plant can prevent flowering and seed set. If you are going to cut once, wait until flowering begins and cut to the ground. This will not significantly injure the established plant, but if you can prevent additional seed, you can begin to limit the expansion of the infestation.

Biological control attempts have been undertaken by the PA Department of Agriculture and USDA-APHIS, who are releasing the *Galerucella* beetle in selected sites to control loosestrife. Biological control is an appropriate approach for larger scale infestations, but not practical at the individual landowner level. The beetles are expensive, the results are variable, and the potential effect is not as quick as more direct approaches.

Purple loosestrife can be effectively controlled with herbicides, but its proximity to water and the surrounding vegetation will determine your product choices.

To apply herbicides to loosestrife in standing water or saturated soil (these constitute 'waters of the Commonwealth') you must be a certified applicator in the

aquatics category, and apply for a permit from the PA Fish and Boat Commission. If the site is not saturated at the time of application, no permit is required. Therefore, time your applications to drier periods.

The aquatic and near-aquatic sites also limit the herbicides available. Purple loosestrife can be controlled with the herbicides 'Accord Concentrate' or 'Renovate 3'. These herbicides can be used in wetland areas that are currently dry. Either must be applied to the foliage of plants. Ideally the treatment is performed at bud-to-early-bloom stage. This will prevent seed development. These treatments should be spot-applied, using a backpack sprayer or a hydraulic sprayer equipped with a handgun, mounted on a truck, tractor, or ATV.

Avoid spraying desirable plants. While not root absorbed, any errant spray contacting foliage of desirable plants can harm them. 'Accord Concentrate' is *glyphosate*, which is non-selective, and will injure all contacted plants. 'Renovate 3' is the 'broadleaf' herbicide *triclopyr*, which reduces risk of injury to grasses, sedges, and rushes.

It will be necessary to follow-up the initial treatment on an annual basis. In heavy infestations, it is likely you will miss some plants. Once loosestrife has infested a site, loosestrife seed will continue to germinate for several years after the last established plant was removed. Also, if loosestrife is on adjacent properties, there will always be a nearby source of a new infestation.

As troublesome as this plant can be, it is manageable if detected and dealt with early. It is important to realize that the best you can hope for is to transition from a control program to a maintenance program. You never get to say 'I won' and turn your back on purple loosestrife.

Table 1. Managing purple loosestrife is limited to hand pulling or postemergence herbicide application. Hand pulling can be useful for limited plant numbers in saturated soils, where pulling is easier. The herbicides 'Accord Concentrate' or 'Renovate 3' are labeled for aquatic or wetland sites. You may not apply herbicide directly to water without a pesticide applicator's license in the aquatics category and a permit from the PA Fish and Boat Commission. You may apply labeled herbicides to seasonally dry wetland or aquatic sites without a permit. We recommend using herbicides labeled for aquatic sites to minimize risk in case of inadvertent application to nearby surface waters.

treatment	application rate	comments
hand pulling	--	This practice is useful for small infestations. Removal of the plants is easier in saturated soils. It is imperative to remove the entire root system or new stems will develop from root fragments.
Rodeo	1.0 to 1.5% spot treatment	'Accord Concentrate' (equivalent to 'Rodeo') is one of many <i>glyphosate</i> products labeled for aquatic or wetland sites. This herbicide is non-selective with no soil activity. This treatment must be targeted to loosestrife only, as spray onto the foliage of desirable plants will injure or kill them. Apply as a 'spray-to-wet' treatment during bud-to-early-bloom stage to prevent seed production. Add a non-ionic surfactant according to label directions.
Tahoe 3A	1.0 to 1.5 % spot treatment	'Tahoe 3A' contains the active ingredient <i>triclopyr</i> , and is labeled for aquatic and wetland sites. <i>Triclopyr</i> is a 'broadleaf' herbicide and will cause minimal injury to adjacent grasses, sedges, and rushes. Spot treatments should thoroughly wet the foliage, just before the point of run-off. Apply during bud-to-early-bloom stage to prevent seed set. Add a non-ionic surfactant according to label directions.

By Jon Johnson, Art Gover, and Jim Sellmer, 2007. The contents of this work reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the U.S. Department of Agriculture or The Pennsylvania State University at the time of publication.

Where trade names appear, no discrimination is intended, and no endorsement by the Penn State College of Agricultural Sciences is implied.

This publication is available in alternative media on request.

The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, gender identity, or veteran status. Discrimination or harassment against faculty, staff, or students will not be tolerated at The Pennsylvania State University. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Director, The Pennsylvania State University, 328 Boucke Building, University Park, PA 16802-5901; Tel 814-865-4700/V, 814-863-1150/TTY.