

Garlic Mustard

[*Alliaria petiolata* (Bieb.) Cavara & Grande]

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Managed Forests



Fig. 1. Garlic mustard infestation in New England.
Photo from Les Mehrhoff, IPANE.

Fig. 2. Garlic mustard plant.

Fig. 2. Garlic mustard flower.

Introduction

Problems Created

Garlic mustard [*Alliaria petiolata* (Bieb.) Cavara & Grande] is a cool-season biennial herb native to Europe. Other common names include jack-by-the-hedge and hedge garlic. It was introduced in the 1800's and escaped as early as 1868. Garlic mustard was once used in flavoring since it is high in Vitamins A and C. It is a serious pest in the northern United States, especially in woodlands where it may dominate the understory crowding out native vegetation.

Regulations

Garlic mustard is a Class A Noxious Weed in Alabama and Washington. In addition, garlic mustard seed are regulated under plant quarantine as Noxious in Washington. It is Banned in Connecticut and Prohibited in Massachusetts, Minnesota, and New Hampshire. Garlic mustard is a Quarantine and "B" designated weed in Oregon. It is a Class B Noxious weed in Vermont.

Description

Vegetative Growth

Garlic mustard is a cool-season biennial from a taproot. It is often found in small to large colonies. Typically basal rosettes are produced the first year followed by one or more 2' to 4' flower stalks in the spring. Plants die after seed production, but remain standing and dispersing seed through the summer. Plants generally have a strong garlic odor when crushed. Stems are erect and slightly ridged, with or without hairs. Leaves are alternately arranged on the stem. The early basal leaves tend to be kidney shaped, but later major leaves are heart-shaped to triangular, 1" to 3.6" long and wide. Leaf margins are shallow to coarsely wavy toothed. Leaf tips are often elongated. Petioles are 0.4" to 3" on stems, but reduced upward.

Flowering

Flowers are clustered at the stem apex, white with four petals. They appear from May to June. Fruit are 4-sided, erect to ascending, thin pods from 1" to 5" long and 0.06" wide. Fruiting plants gradually tan in color. As they mature, the pods may explode expelling numerous tiny black seeds up to 10 feet from the parent plant. Seed release can occur throughout the summer.

Dispersal

Garlic mustard is generally dispersed by seed drop, which may occur throughout the season. It may also be dispersed in contaminated soil or on contaminated equipment.

Spread by

Mature seedbearing plants falling to the ground and people through movement of soil and contaminated equipment.

Habitat

Garlic mustard is a problem in pastures, fence rows, prairies, forest, roadsides, disturbed areas, and open woodlands. Garlic mustard exhibits shade tolerance and can form dense stands in woodland understory suppressing other vegetation through competition and allelopathy.

Distribution

Garlic mustard is widespread in the northern United States, but apparently not escaped in the deep South. It occurs from Washington to Maine south to Oregon and northern Georgia. In the right habitat it can be quite common in certain north-eastern states.

In the MidSouth, it has apparently not escaped in Alabama, Louisiana, and Mississippi. However, it has escaped in Arkansas and Tennessee. It seems to prefer cooler climates, but may be gradually moving south.

Control Methods

Biological Control

Currently no know widespread biological controls are used in the United States for garlic mustard. Research with beetles for biocontrol is being conducted.

Chemical Control

Larger infestations are generally best controlled by spraying with a herbicide. According to Renz (2008) and the Wisconsin Department of Natural Resources (2009) glyphosate can be used to control garlic mustard at 0.75 lbs ae/A or 1-2% ai, respectively. Renz (2008) also observed control on adult plants using Plateau at 6 fl oz product/A, Journey at 16 fl oz product/A, Banvel at 4 fl oz product/A, Oust at 0.5 oz product/A, Escort at 0.5 oz product/A, Sureguard at 3 oz product/A, Certainty at 2 oz product/A and Basagran at 16 fl oz product/A. However, some of these products do not list garlic mustard on the label and are not listed in the control table. If you have questions about these products, contact the manufacturer or your supplier. Because garlic mustard may develop a seed bank, multi-year applications may be necessary.

Mechanical Control

Mechanical controls can be successful for small infestations of garlic mustard. Small infestations may be removed by hand, although this method can be slow and labor intensive. Multiple approaches may be more feasible for larger populations. Removing plants prior to fruit ripening to avoid seed dispersal is suggested. Since seed may exist in the soil seed bank two to six years after plants have been removed, follow-ups are suggested.

Physical Control

Since garlic mustard grows in a wide range of conditions, physical control methods are generally not utilized.

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Table 1. Suggested chemical control methods for garlic mustard.

Common Name	Trade Name	Low Volume Rate/A
Glyphosate	Accord	1-2% v/v
	Accord XRT II	1-2% v/v
Metsulfuron methyl	Escort XP	0.5 to 1 oz.