

Garlic Mustard Treatment Options

Always Remember:

- ❖ All garlic mustard control efforts must consider the plant's maturity and life cycle.
- ❖ Garlic mustard is a very vigorous biennial plant. If control efforts are being carried out when garlic mustard is nearing maturity (**when the plant is in or beyond the flowering stage**), it will retain the ability to produce seeds and therefore the only control option is to hand-pull, bag, and dispose of the plants properly.
- ❖ If plants have gone to seed, are dead and dry, it is recommended that you not enter the infested area to avoid tracking seed in your shoes. It is essential that you revisit the infested area the following spring.
- ❖ **Sanitation:** Avoid tracking garlic mustard seed out of the area by using a boot brush to clean your shoes.
- ❖ **Monitoring:** Visually monitor garlic mustard locations regularly to ensure control efforts have been effective at eliminating seed producing plants. One garlic mustard plant drops hundreds of seeds that can remain viable in the seed bank for 5-7 years.
- ❖ As with most invasive species control efforts, an integrated approach (combining hand-pulling, chemical, fire) can be very effective.



Flowering Garlic Mustard

Can I hand-pull garlic mustard?

- ❖ Hand-pulling is a very effective means of dealing with garlic mustard as long as the root is pulled out. The plant is capable of resprouting if the stem breaks off and the root remains in the ground.
- ❖ When to hand-pull:
 - Pull second year plants that are mature.
 - Pull plants when landowner preference is to control without using chemical.
 - Where high quality spring ephemerals are present.
- ❖ Mature second year plants **must** be hand-pulled and bagged (see below).
- ❖ **Monitoring:** Visually monitor the site regularly to ensure treatment has been effective at eliminating seed producing plants.

Do I have to put pulled garlic mustard plants in bags or can I leave them in the field?

- ❖ The maturity of the garlic mustard plants dictates whether the pulled plants can be left in the field or whether the plants must be bagged.
 - **Bag all plants:** If plants are **in or beyond the flowering stage**. Garlic mustard plants and seeds can still ripen to maturity after plants are uprooted. Bags should be labeled "Invasive plant material: DNR approved for landfill only."
 - **Scatter pulled plants in field:** If plants are pulled before flower budding begins, they may be scattered within the already infested area to dry out. Place pulled plants on logs or other locations where they cannot come into contact with the soil and potentially re-root and continue to produce seed. Do not put pulled plants in **piles** where roots may stay moist allowing development of mature seed to proceed.

Can I mow/ cut garlic mustard?

- ❖ Mow/ cut garlic mustard plants to a level of a few inches above the soil surface:
 - if the garlic mustard is growing in a homogeneous patch (void of spring ephemerals or other native species).
 - if the infestation of garlic mustard is too overwhelming to hand-pull.
- ❖ **Timing:** It is essential to mow the plant before it begins to flower. If the plant is *in or beyond flowering stage* it must be hand-pulled and bagged.
- ❖ **Ecological Considerations:** Mowing is a “broadcast tool” and therefore, is not recommended as a tool for dealing with a specific problem (e.g. garlic mustard). Mowing will likely have a negative effect on native species that do not tolerate mowing—especially mowing on a yearly basis.
- ❖ **Monitoring:** Visually monitor the site regularly to ensure treatment has been effective at eliminating seed producing plants.

Can I chemically treat garlic mustard?

- ❖ Large infestations of plants can be treated with a 1.5 % solution of glyphosate (e.g. Roundup).
- ❖ **Timing:**
 - Spring, late summer, and fall glyphosate applications negatively affect seedlings and young second year plants.
 - Glyphosate will not affect plants that are *well into or beyond flowering stage*—the plants will have time to develop mature seed before the chemical takes hold.
 - Rain occurring 3-4 hours after application will wash glyphosate off plants and render it ineffective.
- ❖ **Ecological Considerations:** Glyphosate should not be used on populations that have high quality native vegetation. Glyphosate is a nonselective chemical and therefore will be detrimental to any green plants including native species.
- ❖ **Monitoring:** Visually monitor the site regularly to ensure treatment has been effective at eliminating seed producing plants.



Emerging Garlic Mustard treated with glyphosate.

Can I use prescribed fire to control garlic mustard?

- ❖ Because of the variation of life cycle stages of garlic mustard, the patchy nature of fire, and the extensive garlic mustard seed bank, prescribed fire alone is not an effective approach for *long term* control. Burns are effective in controlling seedling stage plants but second year plants will resprout after fire, complete their life cycle, and produce seed.
- ❖ Prescribed fire alone is not an effective means of controlling garlic mustard.
- ❖ Prescribed fire conducted in appropriate ecosystems can be effective in dealing with garlic mustard if it is employed as part of an *integrated approach*. An integrated approach involves using various tools such as hand-pulling, chemical, and fire. For example, a prescribed fire will remove the leaf litter and hasten the germination of the seedbank. After the seeds have germinated they are easily seen and can be chemically treated.
- ❖ **Monitoring:** Visually monitor the site regularly to ensure treatment has been effective at eliminating seed producing plants.