

Weed Awareness

Weed Prevention Tips

There are several options for the control of noxious weeds. The easiest and most effective approach is prevention.

Maintain Healthy Grass

Healthy stands of desirable vegetation make it difficult for weeds to get established. Before purchasing grass or forage seed mixes, it's always good practice to request to see a Certificate of Seed Analysis, which details every seed (including weed seeds) contained in the bag. Even if your dealer says the seed is certified, he/she is required by federal law to provide the certificate on request. Replant bare areas and water if necessary. Do not overgraze pastures. If farming, practice conservation tillage to minimize soil disturbance.

Prevent Spreading Weed Seeds

Another basic principle of prevention of new sites becoming infested is not to spread seeds and viable plant parts to new sites. This can be accomplished by being alert to activities that might spread existing infestations and not to infest new sites with movement of noxious weed contaminated articles or materials on to your property. Noxious weeds may be disseminated by several methods or articles. Following are some treatments for articles capable of disseminating noxious weeds, when such articles are suspected to have noxious weeds present.

Harvesting machinery and equipment:

- Remove all loose material from the top and sides of the machine and all other places of lodgement by sweeping or the use of forced air or forced water.
- Remove all noxious weeds from shakers, sieves and other places of lodgement.
- Run the machine empty for at least five minutes, alternately increasing and decreasing the speed.
- Follow the manufacturer's detailed instructions for cleaning the machine.
- Whenever possible, aforementioned treatments should be performed while the article is still on the land on which it became infested. If treatment cannot be performed at this location, the location selected should be such as to minimize the possible dissemination of noxious weeds.

Trucks, RV's, other vehicles and articles such as railroad ties, fence posts and fencing:

- Wash vehicles prior to moving from weeds to weed-free areas whenever possible.
- Treat by brushing, sweeping, forced air, forced water and/or physical removal of noxious weeds.

Livestock:

- Avoid moving livestock directly from weedy to weed-free areas.

Grain and seed suspected to contain noxious weeds should not be sold or transferred to another person:

- Treat by using a seed cleaner which is effective in removing the noxious weeds from the grain and seed.
- Screenings remaining following treatment should not be used for feed or for any other purpose which could result in the dissemination of noxious weeds.

Soil, sod, nursery stock, hay, straw, manure and other similar materials:

- No known acceptable method of treatment exists for these articles. Such articles should not be moved from the location at which they initially become infested, but may be utilized at that location.

Musk Thistle Management Strategy

To successfully fight weeds, you need to know as much as possible about each weed, then develop a strategy to manage that weed. Musk thistle (*Carduus nutans*) is usually thought of as a biennial, germinating one year, usually in the fall, overwintering and flowering the next year. When there is a long enough cool period in the spring, some musk thistle plants will act as annuals by germinating in the spring and flowering in early summer. Musk thistle spreads only by seed. One seed head can produce over 1,000 seeds. The seeds can remain viable in the soil for ten years. The key to managing musk thistle is to prevent all plants from going to seed.



Musk thistle is easiest to kill during the rosette stage (pictured).

Control Steps

- 1) Scout the areas with past infestations in late September and early October for seedlings and rosettes. A seed bank has built up in the soil at these sites. These seeds will remain viable for eight or more years waiting for the right conditions to germinate.
- 2) It is most effective to treat the entire area with herbicides in order

to control all the small seedlings and rosettes and seedlings that have not emerged. Spot control of these sites usually results in a lot of escapes since not all the plants are observed and some plants germinate later.

- 3) Use 2,4-D as a contact herbicide along with a herbicide that will

add to the effectiveness of killing the plants present, but also have residual that will kill later germinating plants. Some of the herbicides that will provide residual control are Escort (www.dupont.com/ag/vm/products/escort.html), Tordon 22K, Vanquish, Banvel and Telar (www.dupont.com/ag/vm/literature/h87276.pdf).

- 4) Scout these fall treated areas in March and April for escapes and new plants.

- 5) Provide control prior to bolting of the flower stem in May. Use 2,4-D along with a residual herbicide.

- 6) Scout these areas weekly and provide needed follow-up control until July. Be alert to the musk thistle plants acting as annuals due to a cool spring. Remember, the best approach to control musk thistle is to scout and treat areas with past

infestations (these areas have built up a seed bank in the soil) in the fall and spring. Provide treatment in the spring prior to bolting and always scout treated areas for escaped plants.

Mechanical Control

Severing the root of musk thistle a couple of inches below the soil surface will kill the plant. The entire root does not have to be removed. Hand cutting or mowing has to be done at weekly intervals to be effective. Fire has not proven to provide effective control. The plants survive prescribed burning, but can be easily found and controlled by other means after the burn.

Biological Control

Musk thistle head weevil (*Rhinocyllus conicus*) is an introduced biocontrol species widespread in Lancaster County. They are reducing the number of viable seeds being produced, but do not provide complete control by themselves. Learn more about biological control at www.nysaes.cornell.edu/ent/biocontrol/weedfeeders/wdfdrtoc.html

REFERENCE

You can find much more information on musk thistle in The Nature Conservancy Element Stewardship Abstract for *Carduus nutans* at <http://conserveonline.org/docs/2000/12/cardnut.pdf>

Leafy Spurge Management Strategy

Leafy spurge (*Euphorbia esula*) is a perennial plant ranging in size from 6–36 inches in height. A native of Europe and Asia, leafy spurge emerges early in the spring and gets a head start on other vegetation in a race for space, sunlight, nutrients and water. Prolific seed production and an extensive root system give the plant a huge competitive advantage and make consistent, long-term control difficult. Monitoring of areas with known or potential leafy spurge infestations is critical; adequate control is possible if management procedures are implemented in the early stages of infestation, before the root system gets fully established. You can rarely achieve 100 percent eradication of spurge, but infestations can be reduced to manageable levels with the use of herbicides.

Strategy

The control of well-established leafy spurge stands must be considered a long-term management program. A landowner must develop a persistent annual program that will prevent the spread of larger stands, eliminate smaller infestations and prevent the spread of leafy spurge to uninfested areas. The extensive leafy spurge root system allows the plant to regrow from depths of 15 feet or more for several years. No single treatment will eradicate this weed, but a consistent annual treatment program can provide long-term control. Once you have achieved a high level of control, remaining isolated patches can be spot-treated, resulting in a less costly control program. This plant spreads by underground roots and there is always a fringe area of younger plants that do not bloom. There are also roots underground that extend laterally beyond the younger plants. A 15-foot perimeter should be



Leafy spurge extend roots deep into the ground as well as laterally.

treated around leafy spurge patches to control seedlings and spreading roots. Treated patches should be watched carefully for any regrowth and/or seedlings and retreated.

Chemical Control

Currently, the three most effective herbicides are Tordon 22K, Plateau and Glyphosate (Roundup and others). Before using any herbicide, always read and follow label directions. Check label for permitted uses on your site.

Tordon (picloram) has been an effective herbicide for controlling leafy spurge. Tordon applied at two quarts per acre during flowering or fall regrowth can give 75 percent or more leafy spurge control the first year after treatment. A less expensive option for leafy spurge control is repeated annual treatments of Tordon at one to two pints per acre plus 2,4-D at one quart (four pound per gallon concentrate) applied in June, during flowering, can be quite effective. Tordon is a restricted-use pesticide requiring an application license to apply. Note label precautions.

Plateau (imazapic) applied in the fall at 8-12 ounces per acre can provide up to 90 percent leafy spurge control one year after treatment. The label recommends application from late-August to mid-October, but prior to a killing frost. Plateau should be applied with a methylated seed oil (MSO) at one quart per acre.

The addition of 28 percent Urea Ammonium Nitrate (UAN) liquid fertilizer to Plateau plus the MSO has occasionally increased long-term leafy spurge control. Plateau is safe to use around a variety of trees, many wildflowers and legumes.

Note: Plateau is not available from normal sources. It is available from the Jefferson County Weed Control Authority (402) 729-3602, jeffcoweed@diodecom.net

Glyphosate (e.g. Roundup) applied at a rate of one quart per acre from mid-July to mid-September can result in 80 to 90 percent control of leafy spurge. Note that glyphosate is a nonselective herbicide and it will kill grasses and other desirable plants. A follow-up treatment with 2,4-D at one pint (four pound per gallon concentrate) the following year (mid-June to mid-July) is necessary to prevent seedling reinfestation.

Mechanical and Grazing

Tillage, digging, mowing and grazing will control the top growth, but does not kill the roots.

Biological Control

Two *Aphthona* flea beetle species have been released in Lancaster County. Flea beetles typically take several years to impact leafy spurge infestations. It is important to understand that flea beetles do not eliminate leafy spurge. When flea beetles work, they establish a natural balance with the weed, reducing it to a non-impact plant and tolerable member of the plant community.

REFERENCE

TEAM Leafy Spurge has two manuals, "Herbicide Control of Leafy Spurge," and "Biological Control of Leafy Spurge," online at www.team.ars.usda.gov under publications.