



Leafy spurge

(*Euphorbia esula*)

Description:

Leafy spurge is an aggressive, persistent, deep-rooted perennial, growing to a height of two to three feet or taller. Native to Europe and Asia, it was introduced to the United States in 1827. Leafy spurge now extends from southern Canada through the northern United States, and as far south as Texas. It has been documented in at least sixteen counties in Washington State.

- **Root system:** Leafy spurge roots are brown with pinkish buds. Plants have an extensive root system, ranging from a massive network of small lateral roots near the soil surface to deep, penetrating taproots that may extend to depths of twenty-one feet. This ability to maintain a large root system, and nutrient reserve, permits the plant to recover quickly from physical and most chemical damage.
- **Stems and leaves:** Stems arise from a woody root crown just below the soil surface. The stems are tightly clustered and bear narrow leaves that are one to four inch long. The leaves have a characteristic bluish-green color but turn yellow or reddish orange in the fall. When damaged, leaves and stems produce a milky latex liquid.
- **Flowers:** Leafy spurge produces clusters of yellowish-green petal-like structures called bracts, which surround the true flowers. The showy yellow bracts appear in late May and early June, giving the plant the appearance of blooming. However, the true flowers, which are small and green, do not develop until mid-June. The distinction between bract appearance and true flowering is important for effective timing of control measures.
- **Fruits and seeds:** Seeds are oblong, gray to purple, and occur in clusters of three. When dry, the seed capsules shatter, throwing seeds up to fifteen feet away from the parent plant. Seeds can remain viable in the soil for at least eight years and may germinate any time to re-establish an infestation.
- **Reproduction:** Leafy spurge reproduces by vegetative growth from spreading roots and by the production of large quantities of seeds that are often dispersed by birds, wildlife, humans, rivers and streams.



K. George Beck & James Sebastian,
Colorado State University, Bugwood.org

Impacts:

Leafy spurge produces a milky latex that is poisonous to some animals and can cause blistering and skin irritation. The digestive tract is similarly affected when it is eaten by humans and animals. In cattle it causes scours (diarrhea), weakness, and when ingested in larger amounts it can cause death. For humans who make accidental contact with the milky sap, the consequences range from minor skin irritation to total blindness if the liquid is rubbed on the eyes.

Infestations of leafy spurge can produce up to 3,400 pounds of seed per acre, and in time, can come to dominate a seed bank and pose continued problems regarding efforts to re-vegetate a site or restore native vegetation.

Although leafy spurge infestations are most severe on undisturbed lands, it can also reduce cropland yields by 10 to 100%. A 1990 study by North Dakota State University estimated the direct annual financial impact in Montana, North Dakota, South Dakota, and Wyoming to be over \$40 million.



Steve Dewey, Utah State University, Bugwood.org

Control Options:

Thurston County's Integrated Pest Management emphasizes cultural, biological, and manual control methods to keep pests and vegetation problems low enough to prevent damage. The goal of Thurston County is to minimize the use of pesticides by utilizing and providing information about the most effective control options that are available and practical.

► Cultural / Habitat

Good pasture management including fertilizing and watering, preventing overgrazing, and re-vegetating disturbed areas will help to prevent invasion of leafy spurge and other unwanted weeds. Thoroughly clean all vehicles and equipment used in an infested area, and suspected of carrying seeds or root fragments, to prevent spreading to new areas.

► Manual / Mechanical

Pulling leafy spurge by hand is usually ineffective, even for small isolated patches. The depth of the root system, and large number of root buds that produce new plants following removal of top growth, make hand pulling or digging impractical. However, it may be possible to hand pull plants that are in their first year of growth, if follow-up visits are made to ensure new

shoots were not produced. Tillage can be used on cropland in areas where there are few other options. As a control method, tillage must be timely and intense, repeating every three weeks without interruption. Fall-only tillage allows land to be utilized for crops, but has poor lasting success without combining with herbicide treatments. Be sure to wear protective clothing whenever handling or working near leafy spurge.

► Biological

Several insect species are being used to help control areas of large infestations. Five species of flea beetles are now established in Washington State. These and other flea beetles, moths, beetles and a gall midge have been released successfully in other states. As with most insect vegetation control options, success is limited to reduction of infestations to more manageable levels. Grazing with sheep and goats has also been used successfully in reducing severity of infestations in pastures and rangeland.

► Chemical

Leafy spurge produces new plants from its roots so it is important to use a systemic herbicide such as **glyphosate** that will move into the root system and kill the entire plant. Currently, products containing the active ingredient glyphosate are the only herbicides for control of leafy spurge that are considered "low in hazard" by Thurston County's pesticide review process. Applications using hand-held or backpack sprayers with a 5% glyphosate concentration are recommended. Many herbicide products have an initial glyphosate concentration of 41% (example: Roundup Pro®, Glyphos®, etc.) and are recommended for diluting to exact percentage solutions. Add methylated seed oil to the tank mix to allow the herbicide to penetrate the waxy coating on the leaves and stems. Follow label directions to mix herbicide to the desired concentration and spray the plants until they are wet but not dripping.

Treatments of glyphosate products should be made in either midsummer or after fall re-growth has begun but before a killing frost. A single application of will usually only suppress leafy spurge. Two or three applications per year for two to three years may be necessary for complete control. Glyphosate is non-selective, and will injure any plants that it comes in contact with, including grass.

Herbicides containing the active ingredient **imazapic**, (Plateau®, Alligare Panoramic 2SL®) are systemic and considered effective, although rated "moderate in hazard" due to chemical persistence and mobility. Fall treatments are most effective for these herbicides. Add methylated seed oil to the tank mix to allow the herbicide to penetrate the waxy coating on the leaves and stems. Follow label directions to mix herbicide to the desired concentration and spray the plants until they are wet but not dripping. Imazapic is also non-selective and may damage any plant it comes into contact with.



Norman E. Rees, USDA Agricultural Research Service
Bugwood.org



10 foot trench showing the length of exposed roots
USDA ARS Archive, USDA Agricultural Research Service, Bugwood.org

Timing:

Herbicide timing depends on the type of herbicide used (see chemical section). For late applications, determine if plants can still be sprayed by cutting a few stems or leaves to see if milky sap flows from the cuts. If it does, plants can still be sprayed.

READ AND FOLLOW ALL LABEL DIRECTIONS AND RESTRICTIONS. Obey all label precautions and safety measures. Always use personal protective equipment that includes coveralls, waterproof gloves, shoes plus socks, and protective eyewear. Use of brand names does not connote endorsement and is for reference only; other formulations of the same herbicides may be available under other names. Information provided is current as of the date of the prescription. Pesticide product registration is renewed annually and product names and formulations may vary from year to year.

REFERENCES:

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Thurston County Noxious Weeds Program
9605 Tilley Road S
Olympia WA 98512
Phone: 360-786-5576
T.D.D. 360-754-2933

www.co.thurston.wa.us/tcweeds/index.html

Thurston County Public Health & Social Services
412 Lilly Road NE
Olympia WA 98506
Phone: 360-867-2586
T.D.D. 360-867-2603

www.co.thurston.wa.us/health/ehipm/index.html