

# VEGETATION MANAGEMENT GUIDELINE

## Leafy Spurge (*Euphorbia esula* L.)



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### SPECIES CHARACTER

#### Description

The greenish-yellow inflorescence of leafy spurge is borne in an umbel pattern and typically blooms from May-October. Each umbel supports 7-10 groups of tiny, inconspicuous, flowers, subtended by 4 crescent-shaped glands and two conspicuous greenish-yellow bracts.

The bluish-green leaves of leafy spurge are usually alternate except for those located immediately under the inflorescence. These are in a whorled arrangement. Another characteristic is the two kinds of leaves present on the stem: leaves located on the lower half of the stem are scale-like, while those on the upper portion are linear to oblong. Leafy spurge has milky white sap.



#### Similar Species

The most conspicuous features to look for when identifying leafy spurge from other plants are its greenish-yellow inflorescences; alternate, linear to slightly oblong or scaly leaves; and milky-white sap that flows readily upon injury to the plant. Leafy spurge should be accurately identified before attempting any control measures. If identification of the species is in doubt, the plant's identity should be confirmed by a knowledgeable individual and/or by consulting appropriate books.

**Distribution**

Native to Europe and temperate Asia, leafy spurge currently is found throughout the world with the exception of Australia. It was probably introduced into the United States as a contaminant in imported grain. Since its invasion, the plant has become a serious management problem, particularly for the north and central plains states. This plant is recorded from 21 counties in the northern half of Illinois, but it has not become a serious nuisance yet.

**Habitat**

This deep-rooted perennial plant is adapted to a wide range of soil moisture conditions from moist to dry. However, the spurge is aggressive especially in very dry situations where competition from native species is less intense. Areas most sensitive to leafy spurge infestation include pastures, roadsides, abandoned fields, railroad ballasts, disturbed and undisturbed mesic to dry prairies, and possibly open natural communities such as savannas.

**Life History**

Leafy spurge emerges in the early spring when temperatures still fluctuate around freezing. Seedlings at this time may be deep red or purplish in color. As the temperature rises, the stems grow rapidly and, if the plant is over a year old, flowers may appear as early as May. After 4-6 weeks, each stalk may produce and disperse over 200 seeds with a germination rate of 60-80%. However, in spite of this impressive germination rate, the key reproductive capabilities of leafy spurge remain underground. The root system of the plant is very extensive. Vegetative reproduction from both crown buds and root buds explain not only the persistence of this weed, but the difficulties encountered in eradicating it as well. Even if the foliage of the plant is removed or destroyed, the living root tissue will regenerate new shoots, and the new shoots can emerge from buds located anywhere along the length of the root.

**Effects Upon Natural Areas**

If leafy spurge becomes well established in Illinois, it will threaten mesic to dry prairies.

**Current Status**

Fortunately, leafy spurge has not heavily invaded Illinois. However, scattered populations have been observed in some portions of northeastern Illinois and pose a serious threat. Left unchecked, just a few plants may easily disperse themselves along interstate highways and right-of-ways.

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**CONTROL RECOMMENDATIONS**

Leafy spurge is well established in the central plains states where much time and effort is spent trying to find a control. Most agree that the key to stopping this pest revolves around the ability to destroy its root system and, until a biological control can be found, herbicides appear to be a temporary solution. Picloram (trade name Tordon) currently is being used on rangelands, but it may be several years before researchers can determine its effectiveness.

The best way to inhibit this nuisance plant from becoming as destructive as purple loosestrife and multiflora rose is to recognize it as a pest now; treat the initial invading populations and prevent it from spreading any farther. In Illinois, it is important to remember that the sooner you attack leafy spurge - in its first year if possible - the better the chances of controlling it. All methods below may need to be repeated for 5-10 years.

*Prescribed burning and herbiciding*

Fire in conjunction with herbicides may be more effective than either method alone. Burning stimulates vegetative growth, making the plant more vulnerable to herbicides. Plants can be sprayed with 2,4-D in autumn (September) and burned the following spring (April). This should be followed by another 2,4-D treatment in June and a fall burn in October. The process may have to be repeated many times.

For top growth control, the herbicide 2,4-D amine can be sprayed on the foliage in a 25% solution (1 part 2,4-D

in 4 parts water) twice a year. The most effective time to apply the herbicide is mid- to late June when the true flowers (not the bracts) begin to appear. The second spray application should be made early to mid September when fall regrowth has begun but before a killing frost occurs.

The nonselective herbicide Roundup (a formulation of glyphosate), sprayed on leafy spurge foliage as a 33% solution (1 part Roundup in 3 parts water), will provide 80-90% top control if applied between mid-August and mid-September. A follow-up treatment with a 25% solution of 2,4-D amine between mid-June and mid-July of the following year is necessary to control seedlings.

Apply the herbicide with a hand-sprayer until the spray coverage is uniform and complete. **Do not spray so heavily that herbicide drips off the target species.** Roundup is a nonselective herbicide that kills grasses and broadleaf plants. 2,4-D is a selective herbicide that kills broadleaf plants, but not grasses. Try to spray leafy spurge only, and carefully avoid contacting nontarget species. Native nontarget plants will be important in recolonizing the site after leafy spurge is controlled. The herbicide should be applied while backing away from the areas to avoid walking through the wet herbicide. By law, herbicides only may be applied according to label instructions and by licensed herbicide applicators or operators when working on public properties.

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## **FAILED OR INEFFECTIVE PRACTICES**

Mowing or hand cutting is not completely effective because the root remains undamaged and new sprouts will reappear rapidly. Also, mowing would have to be done continuously because it stimulates development of inflorescences on the lateral branches.

Hand-pulling, digging, or tilling is not completely effective because the entire root system must be excavated for complete control of leafy spurge. Pulling and digging can rip or cut the root into smaller pieces, leaving portions to resprout. This method could actually increase the number of plants.

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## **REFERENCES**

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## **PERSONAL COMMUNICATIONS**

Panzer, Ron. 1988. Department of Biology, Northeastern Illinois University, Chicago, Illinois.

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**Written for the Illinois Nature Preserves Commission by:**

Maggie Cole

Illinois Department of Conservation

100 First National Bank Plaza

Suite 205  
Chicago Heights, Illinois 60411

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