

# Leafy Spurge



## Background, Life History

Leafy spurge (*Euphorbia esula* L.) is an herbaceous perennial native to both Europe and Asia. Introduced accidentally as a seed contaminant in imported grain during the early 1800s, it has since spread throughout much of the northern half of the United States. Leafy spurge populations are not common in Missouri, but it is likely more widespread than reported. Tolerating moist to dry soil conditions, leafy spurge is most aggressive under dry conditions where competition from native plants is reduced. It is capable of invading disturbed and undisturbed sites, including prairies, savannas, pastures, abandoned fields and roadsides.

Leafy spurge grows erect, up to 3 feet in height. Several stems grow from a single woody crown just below the soil surface and contain a white, milky, sticky sap. Bluish-green, alternate leaves are small, oval- or lance-shaped, somewhat frosted, and slightly wavy along the margin. Flowers bloom from May until October, except during the hottest months of the summer when leafy spurge goes dormant. Flat-topped clusters of yellowish-green petal-like structures called bracts surround the small and inconspicuous true flowers. Gray-brown, oblong seeds are produced in three-celled capsules by mid-July. Seed capsules open explosively, dispersing seed up to 15 feet from the parent plant. Water and wildlife further spread the seed, which have high germination rates and can remain viable in the soil for at least 7 years. The complex root system forms large, tough, woody networks. Vegetative reproduction occurs from both crown buds and root buds that overwinter and produce new shoots in the spring.



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## Impacts

Leafy spurge emerges in early spring and quickly begins producing shade and utilizing available water and nutrients. Toxins produced by leafy spurge inhibit growth of other plants. These attributes allow it to outcompete and rapidly displace native vegetation, often forming a monoculture within a few years. The presence of this unpalatable species renders pastures and rangelands unfit for livestock grazing.



Several stems arise from a single woody crown below the soil surface, often forming "clumps" of leafy spurge.



Two yellowish-green bracts develop prior to the small yellowish-green flowers above, which is important to note when timing initial herbicide applications.



With an extensive and prolific root system and highly viable and persistent seedbank, leafy spurge rapidly invades sunny, open habitats, including undisturbed prairies.

## Control

A systemic foliar-applied herbicide is the most effective treatment to control leafy spurge populations. Several are available including picloram, 2,4-D, glyphosate, dicamba and imazapic. Herbicides are most effective if applied in mid to late June, as flowers and seeds are developing, with reapplication by mid-September when regrowth occurs.

In management studies, picloram provided the best control. However, it is often used in combination with 2,4-D for large infestations as a more economical alternative with reduced impact to non-target species. When used alone, 2,4-D prevents seed production and spread but does little to control the original infestation. Glyphosate and imazapic, when applied between early and mid-September, significantly reduces leafy spurge populations. If left untreated for a single year, leafy spurge can re-establish rapidly due to the long-lived, extensive root system and persistent seed bank. Monitoring and management efforts should continue even after control appears complete.

Biological control is a promising management strategy. The results are not as immediate as when herbicides are used but, with minimal pesticide use, specific insect species have provided effective control within a few years. Ineffective methods include hand-pulling, mowing, cutting, tilling, prescribed burning, and grazing; unless utilized in combination with herbicide application. The roots either remain undamaged or fragments are left to re-sprout.

## Native Look-alikes

Several species of native spurges occur in Missouri. Wood spurge (*Euphorbia commutata*) resembles leafy spurge, but is not invasive and doesn't form monocultures. Their most distinctive morphological characteristic difference is that wood spurge has green bracts opposed to the yellow leafy spurge bracts. Wood spurge leaves are green to yellowish-green and much smaller than leafy spurge's bluish-green leaves.

## Identifying Leafy Spurge

- Several erect stems grow from an underground woody crown and contain white, milky sap
- Alternate, small, oval- or lance-shaped, bluish-green leaves with slightly wavy margins
- Inconspicuous flowers surrounded by two large, yellowish-green, petal-like bracts

## For Additional Information

[mdc.mo.gov/node/5534](http://mdc.mo.gov/node/5534)

[imapinvasives.org/GIST/ESA/esapages/documnts/euphesu.pdf](http://imapinvasives.org/GIST/ESA/esapages/documnts/euphesu.pdf)

[invasivespeciesinfo.gov/plants/leafyspurge.shtml](http://invasivespeciesinfo.gov/plants/leafyspurge.shtml)

[www.team.ars.usda.gov/herbicidemanual.pdf](http://www.team.ars.usda.gov/herbicidemanual.pdf)

[mdc.mo.gov](http://mdc.mo.gov)

For more information or to report a population, contact your local Missouri Department of Conservation office, e-mail [WildlifeDivision@mdc.mo.gov](mailto:WildlifeDivision@mdc.mo.gov), or write:

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**Missouri Department of Conservation**  
**Invasive Species Coordinator**  
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