GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Euphorbia esula***

Euphorbia esula 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Euphorbiales	Euphorbiaceae

Common name

leafy spurge (English), spurge (English), euphorbia esule (French), wolf's milk (English), faitours-grass (English), Hungarian spurge (English), Scharfe Wolfsmilch (German, Germany), Esels-Wolfsmilch (German, Germany), euphorbe feuillue (French), Heksenmelk (Swedish, Sweden), vargtoerel (Swedish, Sweden), euphorbia (English)

Synonym

Euphorbia pseudovirgata
Euphorbia intercedens
Galarhoeus esula
Tithymalus esula
Euphorbia gmelinii , (Steudel)
Euphorbia virgata , (Waldst. & Kit.)
Euphorbia zhiguliensis , (Schur)

Similar species

Summary

Native to Europe and temperate Asia, *Euphorbia esula* (leafy spurge) is found throughout the world, with the exception of Australia. This aggressive invader is one of the first plants to emerge in the spring and displaces native vegetation by shading and out-competing them for available water and nutrients. Leafy spurge contains a highly irritating substance called ingenol that, when consumed by livestock, is an irritant, emetic and purgative.

view this species on IUCN Red List

Species Description

Euphorbia esula has hairless, non-woody stems that sprout from a woody crown root and have alternate, frosted, lance-shaped leaves that are bluish-green in colour. Its height ranges from 5- 90cm. During summer, this plant has yellow bracts (leaf-like petals), which contain greenish-yellow flower clusters at the top of the stem. It grows in very dense stands.

Lifecycle Stages
Euphorbia esula is one of the first plants to emerge in the spring. Stem elongation is very rapid as daily temperatures increase from May through June. Seedlings may emerge when temperatures are near freezing. They may appear deep red or purplish and as the growing season progresses some seedlings will appear to dry up and die but their underground parts will persist and produce adventitious buds especially near the hypocotylar end of the shoot. The main seedling shoot usually does not survive and flower because of the rapid development of adventitious organs. It is replaced by an adventitious shoot that will mature into the flowering shoot. Inflorescences form on the main axis from May to the end of July with flowering and seed development again occurring for a short time in the fall, usually from axillary branches. Seed development and maturation continue for 4 to 6 weeks after the appearance of the last flowers with seed dispersal. The plant usually ceases to grow during the hottest and driest weeks of the growing season. Stems from seedling or root buds generally do not flower the first year. During senescence in the fall, the plants turn a golden-yellow or reddish-yellow before the leaves fall from the plant. The naked stem axis is woody enough to persist from summer to summer and remnants of it can be seen at the base of newly emerged shoot. As light becomes limiting, plants fail to flower, decrease in density, and increase in height. As patches develop, density reaches over 200 shoots/sq m. On heavy soils about 60% of the shoots are produced from seed, whereas on light soils density is maintained and increased mainly by vegetative reproduction (Biesboer, 1996).

Uses
Euphorbia esula has nutrient value similar to alfalfa (*Medicago sativa* L.) and crested wheatgrass (*Agropyron cristatum* (L.) Gaertn.) and provides nutritious forage for sheep and goats. Leafy spurge is used by bee keepers as an early-season food source to maintain honeybee (*Apis* spp.) colonies in early spring, but the honey is bitter and not sold for human consumption.

Habitat Description
Euphorbia esula prefers areas of full sunlight and dry soil but can tolerate a variety of habitats, such as roadsides. *E. esula* is found on prairies, savannas, mountain meadows, and near woodlands.

Reproduction
Euphorbia esula produces flowers following its first year. Each plant can produce up to 200 seeds, of which 60% to 80% will germinate. The seeds are contained in a three-celled capsule which bursts when ripe and shoots seeds up to 4.5 m away from the parent plant. Leafy spurge also spreads from buds on lateral secondary roots.

General Impacts
The root system of leafy spurge is extensive and consists of numerous coarse and fine roots which occupy a large volume of soil. Roots are most abundant in the upper 30 cm of soil, but some roots can extend to a depth of 4.5 m or more. The roots are woody and durable in structure with numerous buds capable of producing new shoots. *E. esula* out-competes native vegetation by consuming available water and nutrients and inhibits growth of surrounding plants by shading. An infestation of leafy spurge reduces forage grasses up to 70% or more, but does not completely eliminate them. \r\n\r\n
Leafy spurge produces a flat-topped cluster of yellowish-green petal-like structures called bracts, which surround the true flowers. The showy, yellow bracts appear about a month after the plant has emerged in the spring and give the plant the appearance of \"blooming.\" However, the true flowers, which are small and green, develop several weeks later. \r\n\r\n
Seeds are borne in pods, which contain three grey-brown, oblong, smooth seeds. After the seed has matured, the seed pods burst explosively and throw seeds up to 15 feet from the parent plant. An average of 140 seeds is produced per stem, and seeds may remain viable in the soil at least 8 years.\r\n\r\n
E. esula has spread to more than 2 million ha of rangeland in the northern Great Plains, causing estimated production losses, control expenses, and other economic damages in excess of $100 million per year (Anderson *et al*., 2004). Leafy spurge spread has been estimated up to 12 to 16% per year (Duncan et al, 2004). *E. esula* infestations in grazing pastures dramatically reduces desirable species and because of the latex cattle avoid grazing areas where leafy spurge is found. Leafy spurge also causes losses due to reduced wildlife-associated recreation and reduced soil and water conservation. Leafy spurge has invaded the habitat of the western prairie fringed orchid (*Platanthera praeclara*) which is an endangered native species of the tall grass prairie in the northern Great Plains of North America and threatens to further reduce the orchid’s remaining habitat.

Management Info
Physical: Hand-pulling and cutting are ineffective and could actually increase the spread.\r\n
Chemical: Leafy spurge is difficult to eradicate with herbicides alone, but top growth control and a gradual decrease in the root system are possible with a persistent management program. Herbicides are used in combination with rotational grazing programs (sheep and goats), biological control insects, and with cultivation or reseeding of competitive grass species. Use of herbicides on a large scale is not cost-effective and generally reduces desirable forbs and shrubs.\r\n
Biological: Biological control with insects has been very successful in nearly all habitats leafy spurge is found except in sandy soils and near rivers and streams that seasonally flood. Mixed populations of the flea beetles *Aphthona czwalinae* Weise and *Aphthona lacertosa* Rosenhauer are extremely effective and reduced leafy spurge density by over 95% within four years of release (Lym & Nelson, 2000). *A. lacertosa* has been the most successful agent in a variety of environments, but *A. nigriscutis* and *A. cyparissiae* have also been widely distributed and have become established in North America. \r\n
The leafy spurge gall midge (*Spurgia esulae* Gagnè) causes stem tip galls on leafy spurge and is the only mult-generational biological control insect introduced for this weed. Since the gall midge only prevents seed-set, established infestations are not reduced. However, this insect will establish in areas *Aphthona* spp. will not such as shaded woodlands and seasonally wet meadows.\r\n
Potential microbial biological control agents have been extensively researched but have not yet been successfully introduced for control of leafy spurge. \r\n
Integrated management: *A. czwalinae* and *A. lacertosa* combined with a fall-applied treatment of herbicides such as picloram plus 2,4-D or imapzpic reduced leafy spurge density 3 to 5 years earlier than when either method was used alone and once reduced, the *Aphthona* flea beetles maintained acceptable control for at least 7 yr. Spring-applied herbicides eliminated the adult food source and negatively affected the flea beetle establishment, but fall-applied treatments did not reduce the flea beetle establishment or its reproduction (Lym & Nelson, 2002). Also, incorporation of *Aphthona* spp. with sheep or goat grazing has resulted in a larger decline in leafy spurge production than insects alone (Lym, 2005).

Pathway
May be introduced for its colourfully yellow bracts.May be accidentally mixed in agricultural seed.

Principal source:

Compiler: IUCN/SSC Invasive Species Specialist Group (ISSG)

Review: Rodney G. Lym, Department of Plant Sciences, North Dakota State University

Pubblication date: 2010-06-03

ALIEN RANGE

[1] ARGENTINA
[10] CANADA
[40] UNITED STATES

Red List assessed species 1: EN = 1;

Platanthera praeclara **EN**

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Summary: English:
The species list sheet for the Mexican information system on invasive species currently provides information related to Scientific names, family, group and common names, as well as habitat, status of invasion in Mexico, pathways of introduction and links to other specialised websites. Some of the higher risk species already have a direct link to the alert page. It is important to notice that these lists are constantly being updated, please refer to the main page (http://www.conabio.gob.mx/invasoras/index.php/Portada), under the section Novedades for information on updates.
Invasive species - Plants is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Plantas [Accessed 30 July 2008]
Spanish:
La lista de especies del Sistema de informaci&#65533;n sobre especies invasoras de m&#65533;xico cuenta actualmente con informaci&#65533;n aceca de nombre cient&#65533;fico, familia, grupo y nombre com&#65533;n, as&#65533; como h&#65533;bitat, estado de la invasi&#65533;n en M&#65533;xico, rutas de introducci&#65533;n y ligas a otros sitios especializados. Algunas de las especies de mayor riesgo ya tienen una liga directa a la p&#65533;gina de alertas. Es importante resaltar que estas listas se encuentran en constante proceso de actualizaci&#65533;n, por favor consulte la portada (http://www.conabio.gob.mx/invasoras/index.php/Portada), en la secci&#65533;n novedades, para conocer los cambios.
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Available from:
http://www.cbif.gc.ca/pls/itisca/taxastep?king=every&p_action=containing&taxa=Euphorbia+esula&p_format=&p_ifx=plglt&p_lang= [Accessed March 2005]
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