

Euphorbia esula

Leafy spurge

Introduction

The genus *Euphorbia* contains about 2,000 species worldwide, primarily in the tropical regions of Africa and Central America. At least seventy-six identified species and four suspected species of *Euphorbia* are reported in China, primarily in the Hengduan Mountain ranges in southwestern China and arid areas of the northwest^[117].

Species of *Euphorbia* in China

(NEXT PAGE)

Taxonomy

Family: Euphorbiaceae

Genus: *Euphorbia* L.

Description

Euphorbia esula L. is a perennial herb with a brown to dark brown cylindrical root. The root is usually branched and flexuous, more than 20 cm in length, and 3-5 cm in diameter. Sometimes appearing in clusters, the stem may grow solitarily, branched from the base, reaching 30-60 cm long and 3-5 mm in diameter. The infertile shoot is usually branched from the base of the leaf axil. Generally 2-7 cm long and 4-7 mm broad, the sessile leaves have various shapes ranging from linear to ovate, with acute apices and truncate or cuneate bases. The leaves on the infertile shoots are needle-shaped, about 2-3 cm long and 1 mm in diameter, and sessile. The sessile solitary cyathium inflorescence grows on the tips of dichotomous branches. The cyathia are monoecious, with one pistillate flower in the center and many staminate flowers surrounded by bracts. The fruits are triangular global capsules, with three ridges on the surface. The seed is ovate, 2.5-3.0 mm long and 2.0-2.5 mm in diameter, and brownish yellow when mature. Like other members of the genus, *E. esula* has milky sap that is poisonous to livestock. Flower and fruit occurs



Euphorbia esula. (Photo by Mrs. W. D. Bransford, LBJWC.)

from April to October^[117].

Habitat

Leafy spurge can be found along roadsides, on hillsides, dunes, in grasslands, and arid, sandy wastelands^{[96][117]}.

Distribution

E. esula has a nationwide distribution in China with the exception of Hainan, Tibet, Taiwan, and Yunnan provinces^{[117][146]}.

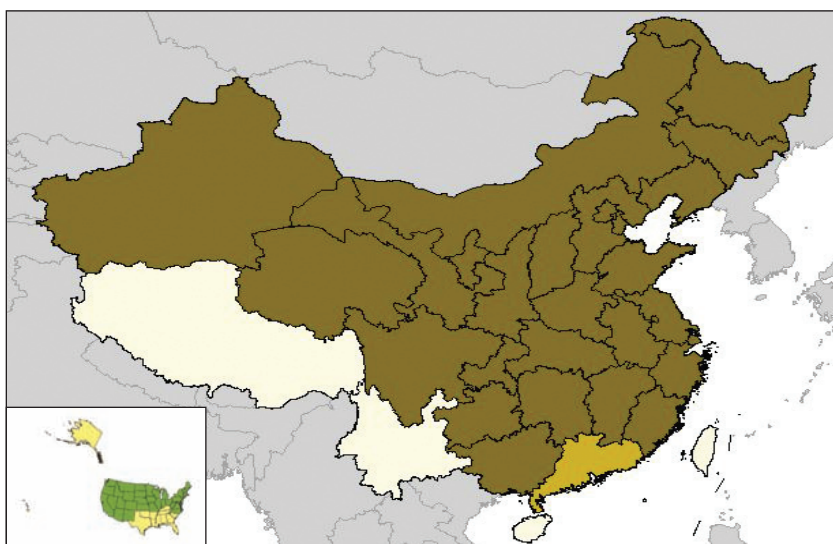
Economic Importance

E. esula is of limited importance for its rich oil content (about 30 percent by weight). *E. esula* is used medicinally in China^[117]. It is a common weed in orchards and roadsides. Although it flourishes in the prairie of Inner

Mongolia, it has not become a serious ecological threat^[96].

Related Species

Some other species can be easily confused with *E. esula* in appearance. *Euphorbia latifolia* Meyer ex Lebeb, which occurs in ravines, grasslands, forest edges, and thickets at elevations of 1,000-1,500 m, is easily identified through its large size and a pedicellate inflorescence, which is absent in *E. esula*. *Euphorbia sieboldiana*, a member of the genus *Euphorbia* with a diverse appearance, has rhizomes and adventitious roots that are absent in *E. esula*^[117].



Natural Enemies of Euphorbia

Twenty-three species of fungi have been reported on members of the genus *Euphorbia*. Two of them, *Melampsora*

euphorbiae and *Melampsora euphorbiae-dulcis* can infect *E. esula* as well as members of the genus *Euphorbia*. Twenty arthropods have been

recorded to attack the plant; three of them, *Aphthona chinchihii*, *Aphthona seriata*, and *Oberea erythrocephala* are regarded as promising biological

Species of Euphorbia in China

Scientific Name	Scientific Name	Scientific Name
<i>E. altaica</i> Meyer ex Ledeb.	<i>E. lingiana</i> Shih	<i>E. alata</i> Boiss.
<i>E. lioui</i> C. Y. Wu & J. S. Ma	<i>E. alpina</i> Meyer ex Ledeb.	<i>E. lucorum</i> Rupr.
<i>E. altotibetica</i> O. Pauls.	<i>E. macrorrhiza</i> Meyer ex Ledeb.	<i>E. antiquorum</i> L.
<i>E. maculata</i> L.	<i>E. atoto</i> Forst. f.	<i>E. makinoides</i> Hayata
<i>E. bifida</i> Hook. & Arn.	<i>E. marginata</i> Pursh.	<i>E. blepharophylla</i> Meyer ex Ledeb.
<i>E. micractina</i> Boiss.	<i>E. buchtormensis</i> Meyer ex Ledeb.	<i>E. milioides</i> Ch. des Moulins
<i>E. consanguinea</i> Schrenk †	<i>E. monocyathium</i> Prokh.	<i>E. cotinifolia</i> L.
<i>E. nerifolia</i> L.	<i>E. cyathophora</i> Murr.	<i>E. pachyrrhiza</i> Kar. & Kir.
<i>E. dentata</i> Michx.	<i>E. pekinensis</i> Rupr.	<i>E. donii</i> Oudejans
<i>E. peplus</i> L.	<i>E. dracunculoides</i> Lam.	<i>E. pilosa</i> L.
<i>E. esula</i> L.	<i>E. prolifera</i> Hamilt. ex D. Don	<i>E. fischeriana</i> Steud.
<i>E. prostrata</i> Ait.	<i>E. franchetii</i> B. Fedtsch.	<i>E. pulcherrima</i> Willd. ex Kl.
<i>E. garanbiensis</i> Hayata	<i>E. rapulum</i> Kar. & Kir.	<i>E. granula</i> Forssk.
<i>E. royleana</i> Boiss.	<i>E. griffithii</i> Hook. f.	<i>E. schuganica</i> B. Fedtsch. †
<i>E. hainanensis</i> Croizat	<i>E. seguieriana</i> Neck. †	<i>E. heishuiensis</i> W. T. Wang
<i>E. serpens</i> H. B. K.	<i>E. helioscopia</i> L.	<i>E. sessiliflora</i> Roxburgh. †
<i>E. heterophylla</i> L.	<i>E. sieboldiana</i> Morr. & Decne.	<i>E. heyneana</i> Spreng.
<i>E. sikkimensis</i> Boiss.	<i>E. hirta</i> L.	<i>E. soongarica</i> Boiss.
<i>E. hsinchuensis</i> (Lin & Chaw) C. Y. Wu & J. S. Ma	<i>E. sororia</i> A. Schrenk	<i>E. humifusa</i> Willd. ex Schlecht.
<i>E. sparrmannii</i> Boiss.	<i>E. humilis</i> Meyer ex Ledeb.	<i>E. stracheyi</i> Boiss.
<i>E. hylonoma</i> Hand.-Mazz.	<i>E. taihsiensis</i> (Chaw & Koutnik) Oudejans	<i>E. hypericifolia</i> L.
<i>E. thomsoniana</i> Boiss.	<i>E. hyssopifolia</i> L.	<i>E. thymifolia</i> L.
<i>E. inderiensis</i> Less. ex Kar. & Kir.	<i>E. tibetica</i> Boiss.	<i>E. jolkinii</i> Boiss.
<i>E. tirucalli</i> L.	<i>E. kansuensis</i> Prokh.	<i>E. tongchuanensis</i> C. Y. Wu & J. S. Ma
<i>E. kansui</i> T. N. Liou ex S. B. Ho	<i>E. turczaninowii</i> Kar. & Kir.	<i>E. kozlovii</i> Prokh.
<i>E. turkestanica</i> Regel.	<i>E. lathyris</i> L.	<i>E. wallichii</i> Hook. f.
<i>E. latifolia</i> Meyer ex Ledeb.	<i>E. yanjinensis</i> W. T. Wang	

† recorded as suspected species in the *Flora Reipublicae Popularis Sinicae*^[11]

Fungi

Phylum	Family	Species	H. R.	Ref.
Ascomycota	Erysiphaceae	<i>Sphaerotheca euphorbiae</i> (Castagne) E.S. Salmon	oo	22
		<i>Sphaerotheca fuliginea</i> (Schltld.) Pollacci	po	23
Basidiomycota	Incertae sedis	<i>Aecidium euphorbiae</i> J.F. Gmel.	oo	23
		<i>Aecidium tithymali</i> Arthur	oo	23
	Melampsoraceae	<i>Melampsora ricini</i> E.A. Noronha	o	23 [†]
		<i>Melampsora euphorbiae-dulcis</i> G.H. Otth	o	23
	Pucciniaceae	<i>Endophyllum</i> sp.	o	123
		<i>Uromyces euphorbiae-lunulatae</i> Liou & Wang	oo	23
		<i>Uromyces kalmusii</i> Sacc.	oo	23
		<i>Uromyces kawakamii</i> Syd. & P. Syd.	mo	23
		<i>Uromyces proeminens</i> Lévl.	mo	23
		<i>Uromyces striolatus</i> Tranzschel	oo	23
<i>Uromyces tuberculatus</i> Fuckel	oo	23		
Oomycota	Peronosporaceae	<i>Peronospora euphorbiae</i> Fuckel	mo	23
	Pythiaceae	<i>Phytophthora cryptogea</i> Pethyb. & Laff.	po	188
		<i>Phytophthora euphorbiae</i> Fuckel	po	188
		<i>Phytophthora insolita</i> Ann & W.H. Ko	mo	188
Anamorphic <i>Apiognomonina</i>		<i>Discula kirinensis</i> Miura	mo	23
Anamorphic <i>Glomerella</i>		<i>Colletotrichum euchroum</i> Syd.	mo	23
Anamorphic <i>Mycosphaerella</i>	<i>Cercospora euphorbiae</i> Kellerm. & Swingle		oo	23
	<i>Cercospora pulcherrimae</i> Tharp		mo	23
	<i>Pseudocercospora brachypus</i> (Ellis & Everh.) Y.L. Guo & X.J. Liu*		po	23 [‡]
	<i>Pseudocercospora petila</i> Goh & W.H. Hsieh		mo	110

[†] Recorded as *Melampsora euphorbiae* (Schub.) Cast.

[‡] Recorded as *Cercospora brachypus* Ell. et Ev.

* Also listed in reference 110.

Arthropods

Order	Family	Species	H. R.	Ref.
Coleoptera	Cerambycidae	<i>Oberea erythrocephala</i> Shrank	‡	123
	Chrysomelidae	<i>Aphthona chinchihi</i> Chen	‡	123
			oo	185
		<i>Aphthona seriata</i> Chen	‡	123
			oo	185
<i>Hespera auricuprea</i> Chen et Wang	po	140		
Homoptera	Cerococcidae	<i>Cerococcus bryoides</i> (Maskell)	po	151
	Pseudococcidae	<i>Planococcus sinensis</i> Borchsenius	po	150
Lepidoptera	Aegeriidae	<i>Chamaesphecia</i> sp.	‡	123
	Arctiidae	<i>Eucharia festiva</i> (Hüfnagel)	mo	40 [†]
			mo	41
	Danaidae	<i>Danaus chrysippus</i> (Linnaeus)	po	203
		<i>Danaus plexippus</i> (Linnaeus)	po	203
	Drepanidae	<i>Oreta insignis</i> (Butler)	po	65
	Noctuidae	<i>Achaea melicerta</i> (Drury)	po	205
		<i>Amathes triangulum</i> Hüfnagel	po	141
		<i>Simyra nervosa</i> (Schiffmüller)	po	12
	Sphingidae	<i>Celerio lineata</i> (Esper)	‡	123
	Tortricidae	<i>Clepsis rurinana</i> (Linnaeus)	po	65
		<i>Clepsis semialbana</i> (Guenée)	po	113
		<i>Cnephasia chrysantheana</i> (Duponchel)	po	113
Thysanoptera	Phlaeothripidae	<i>Neoheegeria flavipes</i> Moulton	po	56

[†] Recorded as *Arctia hebe* (Linnaeus)

‡ the insects attacked leafy spurge, but their H. R. is not mentioned in the report.