

Sapium sebiferum *Triadica sebifera*

Chinese tallow tree

Introduction

The genus *Sapium* consists of approximately 120 species worldwide. Members of the genus occur primarily in tropical regions, especially in South America. Nine species occur in the low hills of southeastern and southwestern China^[16].

Taxonomy

Order: Geraniales

Suborder: Euphorbiineae

Family: Euphorbiaceae

Subfamily: Euphorbioideae

Tribe: Hippomaneae Reichb.

Genus: *Sapium* P. Br.

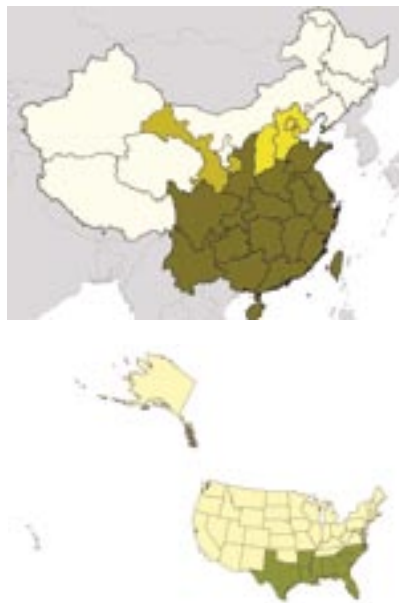
Section: *Triadica* (Lour.) Muell.

Arg

Species: *Sapium sebiferum* (L.) Roxb.
(=*Triadica sebifera* (L.) Small)

Description

Sapium sebiferum is a deciduous tree that can reach 15 m in height. Most parts of the plant are glabrous. The bark is gray to whitish-gray with vertical cracks. The alternate leaves are broad rhombic to ovate 3-8 cm long and 3-8 cm wide, entire margin, and a cordate-acuminate apex and a rounded base.



Species of *Sapium* in China

Scientific Name	Scientific Name
<i>S. sebiferum</i> (L.) Roxb.	<i>S. insigne</i> (Royle) Benth. ex Hook. f.
<i>S. atrobadiomaculatum</i> Metcalf	<i>S. japonicum</i> (Sieb. et Zucc.) Pax et Hoffm.(Sieb.)
<i>S. baccatum</i> Roxb.	
<i>S. chihsinianum</i> S. K. Lee	<i>S. pleiocarpum</i> Y. C. Tseng
<i>S. discolor</i> (Champ. ex Benth.) Muell. Arg.	<i>S. rotundifolium</i> Hemsl.

The petiole is slender, 2.5-6 cm long, bearing 2 glands in the terminal. The stem contains a milky, poisonous sap. Flowers are monoecious, without petals or flower discs, arranged as terminal spikes. The slender male flowers have a 3-lobed cuplike calyx and 2 stamens with separated filaments. One to four female flowers appear at the base of

the inflorescence. The female flower is borne on the pedicel, which is 2-4 mm long with 2 kidney-shaped glands in the base. The flowers appear from April through August. Fruits are pear-shaped globular capsules 1-1.5 cm in diameter. Each fruit contains 3 black seeds that are flat globular and covered with a waxy, white arils at maturity^[16].

Habitat

S. sebiferum occurs in open areas, edges of crop fields, sparse forests, and near bodies of water at elevations below 1200 m. It is also planted as an ornamental along roadsides^[16, 82, 88].

Distribution

S. sebiferum occurs in Anhui, Fujian,, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Taiwan, Yunnan, Zhejiang, and possibly Gansu, most of which are provinces south of the Yellow River.^[17, 86] It is also cultivated in Hebei and Shanxi^[19, 48].



Economic Importance

The rigidity and fine texture of the light colored wood makes *S. sebiferum* suitable for construction and furniture making. The outer root covering has medicinal value. The leaves are a source for a black dye. The wax-coated seeds are a source of candle wax, and fatty acids for soap making. The leaves

are a food source for the larvae of the atlas moth, *Attacus atlas* (Lepidoptera: Saturniidae)^[16, 82]. In addition, *S. sebiferum* is a nectariferous plant^[88, 179]

Natural Enemies of *Sapium*

Three species of fungi have been found on *S. sebiferum*. *Stigmata sapii* is reported to cause abnormal leaf drop

of *S. sebiferum*^[26, 147].

One hundred fifteen species of arthropods have been reported to damage members of the genus *Sapium*. Most of them are foliage feeders. A detailed review on the arthropod species associated with *Sapium* can be found in *Cultivation of Chinese Tallow Tree*^[163, 190, 193].

Fungi

Phylum	Family	Species	H. R.	ref
Ascomycota	Erysiphaceae	<i>Phyllactinia guttata</i> (Wallr.) Lév.	p	[26] ^I
		<i>Phyllactinia sapii</i> Sawada	m	[24]
	Meliolaceae	<i>Meliola sapiicola</i> Y.X. Hu & B. Song	mo	[158]
Anamorphic Mycosphaerella		<i>Cercospora stillingiae</i> Ellis & Everh.	oo	[26]
		<i>Pseudocercospora sapii-sebiferi</i> Sawada ex Goh & W.H. Hsieh	m	[129]
Anamorphic Otthia		<i>Stigmata sapii</i> (J. Miyake) M.B. Ellis	m	[26] ^{II}

^I Recorded as *Phyllactinia corylea* (Pers.) Karst.

^{II} Recorded as *Cercospora micromera* Syd. and *Helminthosporium sapii* Miyake

Arthropods

Order	Family	Species	H. R.	Ref.
Acariformes	Eriophyidae	<i>Phyllocoptruta sapii</i> Kuang & Zhuo	m	[90]
Coleoptera	Attelabidae	<i>Apoderus bicallosocollis</i> Voss	m	[75]
		<i>Apoderus nigroapicatus</i> Jekel	p	[75]
		Cerambycidae	<i>Aeolesthes holosericea</i> (Fabricius)	po
	<i>Aeolesthes induta</i> (Newman)		p	[13]
	<i>Anoplophora chinensis</i> (Förster)		p	[193]
			p	[190]
	<i>Apriona germari</i> (Hope)		p	[193]
	<i>Batocera horsfieldi</i> (Hope)		p	[13]
			p	[94]
			†	[163]
			p	[193]
			p	[190]
			p	[75]
			p	[94]
	<i>Batocera lineolata</i> Chevrolat		p	[94]
			p	[165]
		p	[94]	
	<i>Erythrus championi</i> White	p	[94]	
	<i>Philus antennatus</i> (Gyllenhal)	p	[178]	
	<i>Rhaphipodus gahani</i> Lameere	m	[86]	
Cetoniidae	<i>Cetonia pilifera</i> (Motschulsky)	p	[94]	
	<i>Poecilophilides rusticola</i> (Burmeister)	p	[94]	
Chrysomelidae	<i>Aphthonomorpha collaris</i> (Baly)	m	[75]	
		m	[94]	
		m	[201]	
	<i>Morphosphaera japonica</i> Hornstedt	m	[94]	

Order	Family	Species	H. R.	Ref.	
	Curculionidae	<i>Alcidodes erro</i> (Pascoe)	p	[6]	
			m	[94]	
			p	[178]	
		<i>Chlorophanus auripes</i> Faust	p	[94]	
		<i>Eucryptorrhynchus chinensis</i> (Olivier)	p	[94]	
	Eumolpidae	<i>Hypomeces squamosus</i> Fabricius	p	[193]	
		<i>Colasposoma dauricum auripenne</i> (Motschulsky)	p	[94]	
	Melolonthidae	<i>Cryptocephalus fortunatus</i> Baly	p	[94]	
		<i>Apogonia cribricollis</i> Burmeister	p	[94]	
		<i>Holotrichia plumbea</i> Hope	†	[193]	
		<i>Holotrichia trichophora</i> (Fairmaire)	p	[94]	
	Rutelidae		p	[193]	
		<i>Maladera orientalis</i> Mots	p	[193]	
		<i>Adoretus sinicus</i> Burmeister	†	[193]	
			p	[190]	
		<i>Adoretus tenuimaculatus</i> Waterhouse	p	[94]	
			p	[190]	
	Hemiptera	Acanthosomatidae	<i>Anomala antiqua</i> (Gyllenhal)	†	[193]
		Coreidae	<i>Anomala corpulenta</i> Motschulsky	†	[193]
		Pentatomidae	<i>Anomala cuprea</i> Hope	p	[94]
			<i>Popillia quadriguttata</i> (Fabricius)	†	[193]
Urostylidae		<i>Elasmucha nipponica</i> (Esaki & Ishihara)	p	[208]	
		<i>Physomerus grossipes</i> (Fabricius)	p	[208]	
Homoptera	Aphididae	<i>Eurostus validus</i> Dallas	p	[207]	
		<i>Rhaphigaster genitalia</i> Yang	p	[208]	
		<i>Urochela distincta</i> Distant	p	[94]	
			p	[207]	
		<i>Aphis</i> sp.	†	[163]	
	Cicadellidae	<i>Toxoptera odinae</i> (van der Goot)	p	[75]	
			m	[94]	
		<i>Erythroneura subrufa</i> (Motschulsky)	p	[193]	
	Cicadidae	<i>Nephotettix bipunctatus cincticeps</i> (Uhler)	p	[193]	
		<i>Tettigoniella viridis</i> (Linné)	p	[193]	
	Coccidae	<i>Gaeana muculata consors</i> Distant	m	[75]	
		<i>Ceroplastes japonicus</i> Green	p	[94]	
		<i>Parasaissetia nigra</i> (Nietner)	p	[173]	
	Diaspididae	<i>Saissetia formicarii</i> (Green)	p	[173]	
		<i>Aulacaspis rosarum</i> Borchsennius	p	[190]	
<i>Fiorinia fiorinae</i> (Targioni-Tozzetti)		p	[94]		
<i>Lepidosaphes tubulorum</i> Ferris		p	[94]		
Flatidae	<i>Pseudaulacaspis pentagona</i> (Targioni-Tozzetti)	p	[178]		
	<i>Geisha distinctissima</i> (Walker)	p	[94]		

Order	Family	Species	H. R.	Ref.
	Fulgoridae	<i>Fulgora candelaria</i> (L.)	p	[220]
		<i>Fulgora watanabei</i> Matsumura	m	[220]
	Margarodidae	<i>Icerya purchasi</i> Maskell	p	[193]
	Membracidae	<i>Hypsauchertia chinensis</i> Chou	p	[190]
		<i>Tricentrus aleuritis</i> Chou	p	[178]
Ricaniidae	<i>Ricania speculum</i> (Walker)	p	[94]	
Isoptera	Termitidae	<i>Odontotermes formosanus</i> (Shiraki)	p	[193]
Lepidoptera	Arctiidae	<i>Aloa lactinea</i> (Cramer)	p	[94]I
		<i>Camptoloma interiorata</i> (Walker)	p	[44]
			p	[190]
			p	[75]
			p	[94]
	p	[193]		
	Brahmaeidae	<i>Brahmaea hearseyi</i> (White)	p	[75]
	Cossidae	<i>Arbela dea</i> Swinhoe	p	[94]
		<i>Zeuzera coffeae</i> Nietner	p	[94]
			p	[193]
	p	[190]		
	Eupterotidae	<i>Eupterote chinensis</i> Leech	p	[94]
		<i>Eupterote sapivora</i> Yang & Yang	p	[190]
			p	[196]
	Geometridae	<i>Biston marginata</i> Matsumura	p	[94]
		<i>Buzura suppressaria</i> Guenee	p	[190]
			p	[190]
			p	[178]
			p	[94]
	‡	[193]		
	<i>Comibaena procumbaria</i> (Pryer)	p	[178]	
	Hepialidae	<i>Phassus sinifer sinensis</i> Moore	p	[193]
	Lasiocampidae	<i>Trabala vishnou</i> Lefebure	p	[193]
	Limacodidae	<i>Latoia hilarata</i> (Staudinger)	p	[190]
		<i>Monema flavescens</i> Walker	p	[94]II
			‡	[193]II
			p	[190]II
			p	[75]
		<i>Parasa consocia</i> Walker	p	[94]
		†	[163]	
		‡	[193]	
		<i>Parasa hilarata</i> (Staudinger)	p	[94]
		<i>Parasa pseudorepanda</i> Hering	p	[94]
<i>Parasa sinica</i> Moore	p	[94]		
<i>Phocoderma velutina</i> Kollar	p	[94]		

Order	Family	Species	H. R.	Ref.		
		<i>Setora postornata</i> (Hampson)	p	[94]		
			†	[163]		
			‡	[193]		
			p	[190]		
		<i>Thosea sinensis</i> (Walker)	p	[75]		
			p	[94]		
			p	[178]		
			‡	[193]		
	Lymantriidae	<i>Artaxa flava</i> (Bremer)	p	[94]III		
			<i>Euproctis bipunctapex</i> (Hampson)	p	[212]	
				p	[75]	
				p	[94]	
				†	[163]	
				p	[166]	
				p	[178]	
				p	[193]	
				p	[190]	
			<i>Euproctis pseudoconspersa</i> Strand	p	[212]	
				p	[94]	
				p	[178]	
				p	[193]	
			<i>Euproctis similis xanthocampa</i> Dyar.	p	[190]	
				p	[193]IV	
			<i>Lymantria xyliana</i> Swinhoe	p	[193]	
				<i>Porthesia atereta</i> Collenette	p	[94]
					p	[166]
					p	[178]
	<i>Porthesia scintillans</i> (Walker)	p		[75]		
		<i>Agrotis ipsilon</i> (Hufnagel)		†	[163]V	
			<i>Dysgonia stuposa</i> Fabricius	p	[94]VI	
	<i>Grammodes geometrica</i> (Fabricius)			p	[94]VII	
		Noctuidae		m	[224]VIII	
	m			[75]VIII		
	<i>Iscadia inexacta</i> (Walker)			m	[94]VIII	
				m	[178]VIII	
				m	[190]VIII	
				Oecophoridae	<i>Odites xenophaea</i> (Meyrick)	p
	Papilionidae	<i>Papilio polytes</i> L.	p			[94]
			Psychidae		<i>Acanthopsyche subferalbata</i> Hampson	‡
	p	[94]				
	<i>Chalioides kondonis</i> Kondo	†			[163]	
		‡			[193]	
<i>Clania minuscula</i> Butler		p			[94]IX	
	p	[94]IX				
	†	[163]IX				

Order	Family	Species	H. R.	Ref.
		<i>Clania variegata</i> Snellen	p	[94]X
			†	[163]X
			‡	[193]X
		<i>Dappula tertia</i> Templeton	p	[190]
		<i>Mahasena colona</i> Sonan	p	[94]
	p		[190]	
	Saturniidae	<i>Actias artemis artemis</i> (Bremer & Gray)	p	[226]
			p	[75]
		<i>Actias heterogyna</i> Mell	p	[226]
		<i>Actias selene ningpoana</i> Felder	p	[75]
			p	[94]
			†	[163]
			p	[166]
			p	[193]
			p	[226]
			p	[190]
		<i>Antheraea frithii javanensis</i> Bouvier	p	[226]
			p	[178]
		<i>Attacus atlas</i> (L.)	p	[75]
			p	[226]
		<i>Caligula anna</i> Moore	p	[226]
		<i>Eriogyna pyretorum</i> (Westwood)	p	[190]
		<i>Eriogyna pyretorum lucifera</i> Jordan	p	[226]
		<i>Samia cynthia</i> (Drury)	p	[75]XI
			p	[94]XI
			†	[163]XI
	p		[166]XI	
	p		[193]XI	
	p		[190]XII	
	p		[178]XII	
	p		[226]	
<i>Samia cynthia canningi</i> (Hutton)	p	[226]		
<i>Samia cynthia ricina</i> (Donovan)	p	[178]XIII		
	p	[226]		
Tortricidae	<i>Archips piceana</i> (L.)	p	[193]	
	<i>Gatesclarkeana idia</i> Diakonoff	m	[190]	
Zygaenidae	<i>Soritia pulchella sexpunctata</i> Walker	p	[94]	
Orthoptera	Pyrgomorphidae	<i>Atractomorpha sinensis</i> I. Bolivar	p	[94]
Phasmida	Phasmatidae	<i>Baculum saussure</i> (Saussure)	p	[190]
Thysanoptera	Thripidae	<i>Selenothrips rubrocinctus</i> (Giard)	p	[66]
			p	[75]

†pest list appendix of Chinese literature

‡Not described in the literature

^IRecorded as *Amsacta lactinea* (Cramer)

^{II}Recorded as *Cnidocampa flavescens* (Walker)

^{III}Possible synonym of *Euproctis flava* (Bremer). According to the Chinese name it may be *Euproctis chrysorrhoea* (L.)

^{IV}Possibly *Euproctis similis* (Fuessly)

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- ^vRecorded as *Agrotis ypsilon* (Rottemberg)
^{vi}Recorded as *Parallelia stuposus* Fabricius
^{vii}Recorded as *Chalciope geometrica* Fabricius
^{viii}Recorded as *Gadirtha inexacta* Walker
^{ix}Recorded as *Cryptothelea minuscula* Butler
^xRecorded as *Cryptothelea variegata* Snellen
^{xi}Recorded as *Philosamia cynthia* Walker & Felder
^{xii}Recorded as *Philosamia cynthia walkeri* Felder & Felder
^{xiii}Recorded as *Philosamia cynthia ricina* Donovan