Striga asiatica 简体中文 正體中文 **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Magnoliopsida	Scrophulariales	Scrophulariaceae

Common name Matabele flower (English), Asiatic witchweed (English), mealie poison (English), witchweed (English), yaa mae mot (English), red witchweed (English), isona weed (English), common mealie witchweed (English), buri (English), mealie witchweed (English), striga (English), scarlet lobelia (English)

Synonym
Striga lutea , Lour.
Striga zangebarica , Klotzsch.
Striga pusilla , Hochst.
Striga coccinea , Benth.
Striga spanogheana , Miq.
Striga parvula , Miq.
Stiga hirsuta , Benth.
Buchnera asiatica , L.

Similar species

Summary Striga asiatica is an annual parasitic weed of agricultural crops. It has a gigantic impact on human welfare by affecting subsistence farmers and consequently aggravates hunger and poverty. Striga asiatica robs nutrients and moisture by tapping directly into a host's root system. The host expends energy supporting the growth of Striga asiatica at its own expense. Control can be obtained but at great economic costs.

view this species on IUCN Red List

Species Description
S. asiatica seedlings are not visible above ground, but white succulent shoots can be found attached to host roots. Mature plants have green foliage above ground and that is sparsely covered with coarse, short, white, bulbous-based hairs. *S. asiatica* are normally 15-30cm tall but have grown to 60cm. Leaves are nearly opposite, narrowly lanceolate, about 1-3cm long, with successive leaf pairs perpendicular to one another. *S. asiatica* flowers in summer and fall. Flowers are small (less than 1.5cm in diameter) are sessile, axillary, the corolla is two-lipped, and they occur on loose spikes. Flower colour varies regionally, from red, orange, or yellow in Africa to pink, white, yellow, or purple in Asia. The flowers give way to swollen seeds pods, each containing thousands of microscopic seeds. Underground stems are round with scale-like leaves and white but turn blue when exposed to air. The roots are succulent, round, without root hairs, and found attached to a host species root system. (CDFA, 2006; Invasive.org, 2006).

Lifecycle Stages
The CDFA (2006) reports that, \"*S. asiatica* seeds are dispersed with wind, water, soil movement, human activities, and by clinging to the feet, fur, or feathers of animals, farm machinery, tools, shoes, and clothing. Seeds require an after ripening period of 6 weeks under warm conditions to 40 weeks under freezing conditions. Dormant seeds survive freezing for at least 49 days and can remain viable under field conditions for up to 14 years or more. Germination is complex and requires about a 1-3 week \"conditioning\" period at a suitable temperature regime under moist conditions, followed by a chemical signal from a nearby root of a host plant. Proximity of host root to seed must be within a few millimetres. Under these conditions, seeds germinate within 24 hours. After 3 weeks of conditioning without a chemical signal, germination ability of seeds decrease, and some seed may pass into a secondary dormancy. Light exposure or wet soils inhibit germination. Irregular or light rainfall appears to promote seed germination and plant vigor. High soil nitrogen reduces damage to host plants. Flowers develop about 3 weeks after emergence. Viable seed is produced within 2 weeks of flowering. A minimum of ~ 60 days is required from seed germination to seed production\".

Habitat Description
S. asiatica is native to semi-arid and tropical grassland regions of Africa and Asia, but can also flourish in temperate regions outside its natural range. It is primarily associated with agricultural lands, especially those with light soils and/or low nitrogen fertility where it infests a wide range of grass crops (maize, millet, rice, sorghum, sugarcane) and some broadleaf crops (e.g. sunflower, tomatoes, some legumes). It will also be found in grasslands. It does not grow in wet conditions (CDFA, 2006; and PIER, 2006).

Reproduction
Flowers of *S. asiatica* self-pollinate before opening when sticky pollen balls cling to the elongating style. The fruit of *S. asiatica* is a seed capsule that is ovoid and 5 sided with narrow wings at each corner. Capsules can contain up to ~ 1400 seeds (~ 550 average). Seeds are brown, oval and ~ 0.2mm long. The seed surfaces are striated and overlayed with a reticulate pattern that is visible with magnification (CDFA, 2006).

General Impacts
Globally, parasitic weeds of the genus *Striga* have a gigantic impact on human welfare because their hosts are often subsistence crops in marginal areas of agriculture in semi-arid and sub-humid tropical regions which result in little or no food at all for millions of subsistence farmers and consequently aggravate hunger and poverty. Infestations reduce yields and contaminate crops. Yield losses of 5-15% are common, although locally, under severe infestations, losses can far exceed this amount. *S. asiatica* impairs photosynthesis of susceptible maize hosts through limiting stomatal conductance and sensitizes infested plants to photo inhibition. Symptoms in host plants include stunting, chlorosis, and wilting (CDFA, 2006; Elzein and Kroschel, 2004; Invasive.org, 2006; and Gurney *et al.* 2001).
S. asiatica attacks important crops such as: corn, sorghum, sugar cane, and rice. It is also known to parasitize certain weedy grasses. *S. asiatica* robs nutrients and moisture by tapping directly into a host's root system. The host expends energy supporting *S. asiatica* growth at its own expense. *S. asiatica* will grow in the presence of grassy weeds as well as grass host crops, so cotton, peanut, or soybean fields-along with home gardens or idle land-may harbor this species (APHIS, 2000).
Federal and state quarantine and eradication programs have been able to greatly reduced the area of *S. asiatica* infestation since 1955 but with at a great economic cost (CDFA, 2006).

Management Info

Integrated management:: The CDFA (2006) suggests that light infestations can usually be controlled by hand pulling before seed is produced. For heavier infestations, an integrated management plan is required. Options include: 1) growing trap-crops (those that stimulate *S. asiatica* seed germination but do not host the parasite) such as cotton or catch-crops (susceptible crops that are harvested before *S. asiatica* seed is produced) for 3 or more years; 2) allowing land to lay fallow for several years; injecting the soil with ethylene (a germination stimulant); 3) enhancing soil nitrogen fertility; 4) growing the most tolerant cereal varieties; 5) utilizing herbicides known to prevent *S. asiatica* emergence or seed production (CDFA, 2006).
Research conducted by Mohamed *et al.* (1998) suggests evaluating the efficacy of ethylene treatment before application. Their research has shown that if seeds buried in the soil have moisture content above their threshold, then application of ethylene will not cause suicidal germination. The authors state that, \"One does not need to condition the seed to observe readiness to germinate but need only measure moisture content. When the seeds reach a certain moisture content they will fail to germinate, so inducing this high moisture content by pre-watering the soil in irrigated fields or by delaying the sowing date in areas with a long rainy season could be a strategy for an integrated approach to control. This could easily be managed if weed scientists or extension officers measured the seed moisture content. When certain moisture content is reached, they can recommend a sowing date for farmers in Striga-infested areas (Mohamed *et al.* 1998).
Biological: Elzein and Kroschel (2004) have found that the fungal pathogen *Fusarium oxysporum* abbreviated as Foxy 2, isolated from diseased *S. hermonthica* plants from Ghana, proved to be highly pathogenic against all developmental stages of the parasite, including seeds. Foxy 2 was found to be very effective in reducing the seedbank of *S. asiatica* by destruction of the seeds and prevention of emergence and subsequent reproduction, however, no severe disease symptoms or death were observed on the emerged *S. asiatica* shoots but its potential application as a biological control agent for this species is still a possibility for early developmental stages of *S. asiatica* (Elzein and Kroschel, 2004).

Principal source: CDFA, 2006 Witchweed *Striga asiatica* (L.) Kuntze
APHIS, 2000. Witch weed: A Parasitic Plant

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review:

Pubblication date: 2006-03-13

ALIEN RANGE

[1] AUSTRALIA
[1] BRITISH INDIAN OCEAN TERRITORY
[1] CAMBODIA
[1] INDONESIA
[1] MADAGASCAR
[1] MALAYSIA
[1] MAURITIUS
[1] PHILIPPINES
[1] SINGAPORE
[3] UNITED STATES

BIBLIOGRAPHY

11 references found for **Striga asiatica**

Managment information

Animal and Plant Health Inspection Service (APHIS), 2000. *Witch weed: A Parasitic Plant*. United States Department of Agriculture Fact sheet: Plant Protection and Quarantine.
Summary: Available from: [Accessed 13 February 2006]
CDFA (California Department of Food and Agriculture). 2006. *Witchweed Striga asiatica (L.) Kuntze*. Noxious Weed Index.
Summary: Available from: http://www.cdfa.ca.gov/phpps/ipc/weedinfo/striga.htm [Accessed 13 February 2006]
Elzein, A., and J. Kroschel. 2004. *Fusarium oxysporum Foxy 2 shows potential to control both Striga hermonthica and S. asiatica* . European Weed Research Society Weed Research 2004 44, 433-438.
Mohamed, A. H., G Ejeta, Butler, and Housley. 1998. *Moisture Content and Dormancy in Striga asiatica seeds*. Weed Research 38(4):256.

Varnham, K. 2006. Non-native species in UK Overseas Territories: a review. JNCC Report 372. Peterborough: United Kingdom.
Summary: This database compiles information on alien species from British Overseas Territories.
Available from: http://www.jncc.gov.uk/page-3660 [Accessed 10 November 2009]

General information

Global Biodiversity Information Facility (GBIF), 2010. Species: *Striga asiatica* (L.) Kuntze
Summary: Available from: http://www.gbif.net/species/13762709/ [Accessed 15 June 2010]
Global Compendium of Weeds. 2002. *Striga asiatica* (L.) Kuntze.
Summary: Available from: http://www.hear.org/gcw/html/autogend/species/18747.HTM [Accessed 13 February 2006]
Gurney, A. L., A. Taylor, A Mbwaga, J. D. Scholes, and M. C. Press. 2001. *Do maize cultivars demonstrate tolerance to the parasitic weed Striga asiatica?* European Weed Research Society Weed Research 42:299-306.
Invasive.org. 2006. *Asiatic witchweed*. The Bugwood Network, USDA Forest Service and USDA APHIS PPQ.
Summary: Available from: http://www.invasive.org/browse/subject.cfm?sub=4576 [Accessed 13 February 2006]
ITIS (Integrated Taxonomic Information System), 2005. Online Database *Striga asiatica*
Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.
Available from: http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=505388 [Accessed 7 September 2005]
PIER (Pacific Island Ecosystems at Risk). 2005. *Striga asiatica* (L.) Kuntze, Scrophulariaceae .
Summary: Available from: http://www.hear.org/pier/species/striga_asiatica.htm [Accessed 13 February 2006]