

***Sida rhombifolia* L.**  
MALVACEAE

arrowleaf sida

Synonyms: *Sida hondensis* Kunth in Humb.  
*Sida ruderata* Macfad.



**General Description.**—Arrowleaf sida is known by many common names: broom weed, paddy's lucerne, Cuba jute, common sida, escoba dulce, escoba blanca, escoba dura, malva de cochino, huang hau mu, rhomboid ilima, antibala, idem, afata, guanxuma, and basbasot (Holm and others 1997). It is a short-lived perennial subshrub (woody stem and herbaceous branches) commonly growing to 60 cm, but sometimes reaching 1.5 m in height. (Holm and others 1997, Howard 1989, Liogier 1994). Arrowleaf sida develops a taproot and many lateral and fine roots. The plant usually has a single stem unless disturbed, but may branch near the ground. The stems are woody, flexible, and tough, and may reach 1 cm or more in basal diameter. The twigs are slender, green, and semiwoody. The alternate leaves are variable in both shape and size. They have a 3- to 8-mm petiole with broadly ovate to lanciolate (often rhomboidal) blades 2 to 6 cm long and serrate at the margins, especially from the middle to the tip. The axillary flowers are solitary on slender pedicels 2 to 3 cm long. The corolla contains five pale yellow to yellow-orange petals. The fruits are round, flattened schizocarps, 4 to 5 mm in

diameter and contain 10 to 14 small dark-brown seeds. Both diploid ( $2n = 14$ ) and tetraploid ( $2n = 28$ ) forms exist (Holm and others 1997, Howard 1989, Liogier 1994).

**Range.**—Arrowleaf sida grows today in over 70 countries throughout the tropical, subtropical, and warm temperate regions (Holm and others 1997, Howard 1989). Its original range is not known, but the presence of multiple subspecies and varieties seems to indicate that it was from the Old World. The species was introduced into the United States in the late 1800's as a promising fiber crop (Holm and others 1997).

**Ecology.**—Arrowleaf sida grows only in disturbed areas and in situations where overhead competition is controlled or naturally light. It is common in cultivated fields, pastures, abandoned farmland, roadsides, vacant lots, construction sites, landslides, and river overflow areas. It does not survive in tall grass swards, tall brushlands, and closed forests. Arrowleaf sida grows on both fertile and degraded soils of all textures and derived from most parent materials. It may be found growing from near sea level to 2,000 m in elevation (Holm and others 1997). In Puerto Rico, the species grows in areas receiving from 900 to 3000 mm of precipitation.

**Reproduction.**—Arrowleaf sida flowers and fruits continuously starting at 3 or 4 months of age in Puerto Rico. In Central India, plants flower from September to December and fruit from October to January (Parrotta 2001). A single plant can produce as many as 11,600 seeds. Individual seeds have been reported to weigh between 0.0012 and 0.0015 g (Holm and others 1997). Seeds collected in Puerto Rico averaged 0.0016 g/seed or 625,000 seeds/kg. Sown on moist filter paper without any pretreatment, 33 percent germinated within 13 months (author's observation). Fresh seed is dormant, and dry storage, freezing, various light regimes, and several chemical treatments failed to induce germination. However, acid scarification, heating, and cold storage succeeded in breaking dormancy. Some 80 percent germination was

obtained at the best soil depth for germination, which was 0.5 to 2 cm (Holm and others 1997). Arrowleaf sida plants sprout vigorously if cut. The seeds are dispersed by water, farm machinery, ruminant animals, and in impure agricultural seed. Ants disperse the seeds in Africa (Holm and other 1997).

**Growth and Management.**—Arrowleaf sida plants may reach 0.5 m or more in their first year. Growth is most rapid in warm conditions (days of 30 °C and nights of 25 °C). Growth nearly ceases below 20 °C. Plants survive frosts and winters as far north as Tennessee (Holm and others 1997). Although the species is able to perpetuate itself as an annual in difficult climates and under cultivated agriculture, the aerial portions of individual plants in favorable climates may live 3 years, and possibly more by resprouting. Control, but not elimination of arrowleaf sida in plantations and pastures may be achieved by hand weeding and herbicide spraying. Hand pulling and mowing are only partially effective because arrowleaf sida is difficult to pull and quickly sprouts after cutting. The weed problem from arrowleaf sida becomes more severe in reduced tillage agriculture (Holm and others 1997). Mowing or chain slashing is recommended in pastures to suppress arrowleaf sida and other unpalatable *Sida* species and allow pasture forage plants to grow (Food and Agriculture Organization 2002). Effective biological control has been obtained in Australia and Papua New Guinea by introducing the leaf-eating beetle *Calligrapha pantherina*, which feeds exclusively on three species of weedy *Sida*'s (Kuniata and Rapp 2001).

**Benefits.**—Arrowleaf sida stems are used as rough cordage, sacking, and for making brooms. The stems have a high quality fiber and were once exported from India and elsewhere as “hemp” (Guzmán 1975, Holm and others 1997). Chemical analysis revealed that the leaves contain respectable amounts of nutrients: 74,000 to 347,000 ppm protein, 94,000 to 475,000 ppm carbohydrates, 33,000 to 167,000 ppm fiber, 14,000 to 71,000 ppm fat, and 16,000 to 81,000 ppm ash. However, it was reported that the root contained 450 ppm alkaloids and the presence of ephedrine and saponin (Southwest School of Botanical Medicine 2002). Another source reports an alkaloid content in the root of 0.1 percent and the presence of choline, pseudoephedrine, beta-phenethylamine, vascine, hipaphorine and related indole alkaloids (Shaman Australis Ethnobotanics 2002). Perhaps because of these

chemicals, arrowleaf sida is unpalatable to cattle (Kuniata and Rapp 2001). Arrowleaf sida has significant medicinal applications for which it is cultivated throughout India. The pounded leaves are used to relieve swelling, the fruits are used to relieve headache, the mucilage is used as an emollient, and the root is used to treat rheumatism (Parrotta 2001). Australian Aborigines use the herb to treat diarrhea. Leaves are smoked in Mexico and a tea is prepared in India for the stimulation it provides (Shaman Australis Ethnobotanics 2002).

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John K. Francis, Research Forester, U.S.  
Department of Agriculture, Forest Service,  
International Institute of Tropical Forestry, Jardín  
Botánico Sur, 1201 Calle Ceiba, San Juan PR  
00926-1119, in cooperation with the University of  
Puerto Rico, Río Piedras, PR 00936-4984