Liquidambar styraciflua

L.

Hamamelidaceae

sweet gum, satin walnut

LOCAL NAMES
Dutch (amberboom); English (sweet gum,hazel wood,red gum,yellow gum,hazel pine,alligator tree,satin walnut,blade gum,sycamore gum,bilstead,American red gum,starleaf gum); Spanish (ingamo,ien-gau-o,icob,kamaliso,estoraque,ko'ma,copalome,occob,copalme,copalillo,balsamo,cotoraque,slu'to'nko,yaga-huille,yaga-bizigui,xochicatsuahuitl,tzote,suchete,nite-biito,somerio,liquidambar,quirambaro,quiramba,ocozote,ocop,ocom,nitje-pijto,molá); Trade name (sweet gum,satin walnut)

BOTANIC DESCRIPTION
Liquidambar styraciflua is a medium to large deciduous tree, capable of attaining heights of more than 50 m, and from 1.5 to 4.5 m in diameter, with a straight bole. Bark on the main trunk is furrowed and greyish, and may be over 1 cm thick on old trees; younger branches red-brown, often with corky ridges or thick wings.

Leaves simple, 3-5 lobed, lobes triangular with a serrated margin, spirally arranged; laminae much broader than long, 4-11 x 5-15 cm, apex generally broadly acuminate, the base of the leaf truncated or weakly cordate, opaque dark green on the upper surface and light green beneath, changing to reddish or yellow when old and becoming glabrous; nervation palmate and prominent on the under surface with a bunch of hairs in the nerve axils. Leaves have an agreeable resinous smell when crushed. Petioles 1.5-9 cm long, greyish-brown and glabrous; young leaves bright green and soft.

Buds up to 1.5 cm long covered in acute or obtuse, brown, glabrous, shining scales; margin ciliolate; stipules 2, approximately 5 mm long, lanceolate, glabrous and caducous. A monoecious species: flowers borne in terminal or axillary panicles on short, lateral, woody, pubescent branchlets, 5-10 cm long. Male flowers on the upper part of the panicle, each bundle of flowers on a short branchlet 2-20 mm long, subtended by 1 or several ovate papery caducous ciliolate bracts; perianth absent; stamens numerous. Female flowers in small heads, 6-8 mm in diameter, held on a short stalk up to 1 cm long; regular, subtended by bracts similar to those in male flowers; perianth very short with 4-6 acute or truncate fleshy, papillose lobes; stamens absent; ovary semi-inferior with 2 partially free carpels.

Fruits grouped in small heads, 2.5-4 cm in diameter, on pendulous glabrous peduncles, 5-6.5 cm long; heads globose, spiky, woody, brown or shiny black, bivalved capsules, dehiscing at the apex, containing many brown, winged seeds 6-8 mm long.

The generic name is from the Latin 'liquidus' (liquid) and the Arabic 'ambar' (amber), because of the plant's secretion of an aromatic fluid.

BIOLOGY
In South America, L. styraciflua flowers from January to March.

L. styraciflua, seedlings in nursery. (David Boshier)

L. straciflua typically forms a straight tree with a narrow crown and light branching, as here on the Sierra de Omoa, northern Honduras. (Colin E. Hughes)

Ripe fruits of L. styracflua. (Colin E. Hughes)

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ECOLOGY
Throughout its native range in North and Middle America, L. stryraciflua is often found in mixed or 'transition' forest, mainly associated with pine or oak. Trees loose their leaves completely between November and March-April in temperate regions, and this deciduous habit is maintained throughout the tropical part of the species' natural range, although the leafless period may be reduced to 1 month. L. styraciflua occurs widely in the southeastern states of the USA (Alabama, Carolinas, Georgia, Maryland) extending as far as Connecticut, westwards to Missouri, Arkansas and Oklahoma and southwards to central Florida.

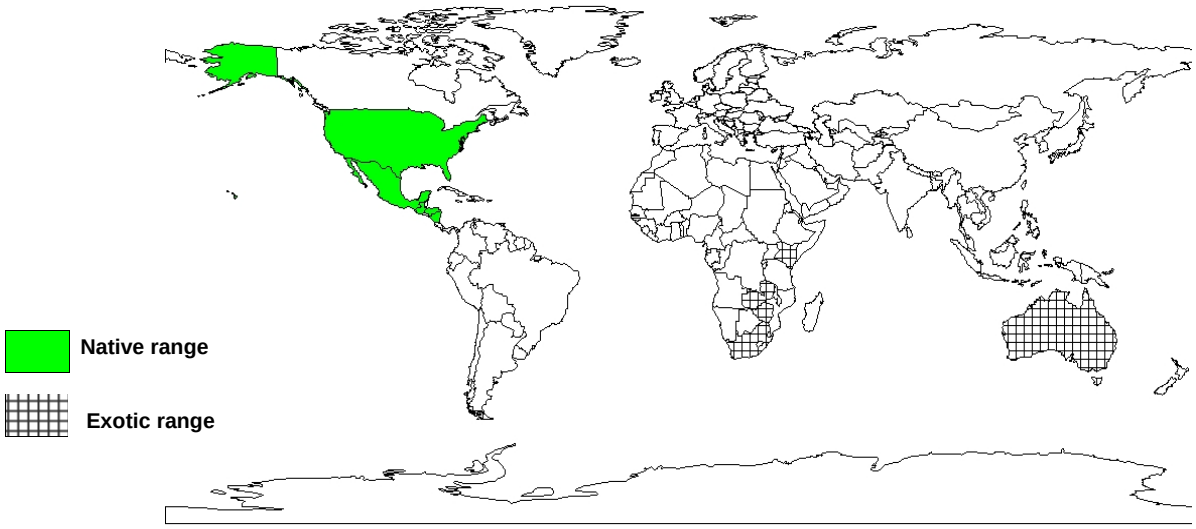
Trees are able to withstand a drought of up to 6 months. On account of its broad distribution range, there are marked differences in the frost tolerance of different provenances of the species. The northernmost populations (Connecticut) regularly experience minimum temperatures of the order of -24 deg. C, and those in Florida, -7 deg. C. The Mexican and Central American populations probably never experience frost, and it seems unlikely that they would show any degree of tolerance to it.

BIOPHYSICAL LIMITS
Altitude: (650) 900-1 600 (2000) m, Mean annual rainfall: 1000-1800 mm, Mean annual temperature: 8-20 deg C.

Soil type: The species is tolerant of a wide range of site conditions but prefers the richer, moister, well-drained, acidic, alluvial clay and loam soils of river bottoms.

DOCUMENTED SPECIES DISTRIBUTION

Native: Guatemala, Honduras, Mexico, Nicaragua, US
Exotic: Australia, Cyprus, Kenya, South Africa, United Kingdom, Zambia, Zimbabwe



The map above shows countries where the species has been planted. It does neither suggest that the species can be planted in every ecological zone within that country, nor that the species can not be planted in other countries than those depicted. Since some tree species are invasive, you need to follow biosafety procedures that apply to your planting site.

PRODUCTS
Fibre: Pulp and particleboard are obtainable from yellow gum.

Timber: The heartwood is a distinctive dark brown, sometimes beautifully figured with deep markings. Wood is hard, dense, bright red-brown; in the USA it is widely used by the furniture and cabinet making industries. Other major uses include boxes, crates, pallets and plywood.

Medicine: A balsamic exudate obtained from the sap of trees is used in the pharmaceutical industry.

SERVICES
Erosion control: L. styraciflua has potential for use in revegetating disturbed areas.

Soil improver: Leaf decay improves soil by increasing the activity of soil microflora and building up the humus layer.

TREE MANAGEMENT
L. styraciflua has been managed extensively both in natural stands and in plantations in the USA, so a wealth of information is available on its silviculture. Field establishment is straightforward, benefiting from effective weed control. Planting of nursery-grown mycorrhizal sweet gum seedlings in sites may improve stand establishment and permit better utilization of fertilizers and other soil resources. The species coppices readily.

GERMPLASM MANAGEMENT
Seed storage behaviour is orthodox with no loss in viability during 9 years of hermetic storage at 3 deg. C with 5-10% mc; initial viability was maintained for at least 4 years in hermetic storage at 4 deg. C with 10-15% mc; seeds tolerate desiccation to 3.2% mc, no loss in viability occurs after 10 years of hermetic storage at -18 deg. C with 3.2-13.6% mc; 30% viability lost at 10 deg. C with 8.4% mc; considerable loss (80%) at 4 deg. C with 3.2% and 8.4% mc; and complete loss at 4 deg. C or 10 deg. C with 13.6 mc. There are about 178 600 seeds/kg.

FURTHER READNG

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SUGGESTED CITATION

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