

Albizia julibrissin

Durazz.

Fabaceae - Mimosoideae

LOCAL NAMES

Chinese (ho hun,ho huan); Dutch (acacia van Constantinopel); English (pink siris,Persian acacia,pink silk tree,mimosa,silk mimosa tree,silk tree,silky acacia,pink mimosa); French (arbre à soie,acacie de Constantinople); German (persische Seidenakazie,Julibrissin- Albizzie); Hindi (karmaru,brind,lal,tandai,shishi,sirin,siris,kurmru); Italian (acacia di Constantinopoli,gaggia di Constaninopoli,gaggia arborea,albero de la seta); Japanese (nemu-no-ki); Nepali (kato siris)

BOTANIC DESCRIPTION

Albizia julibrissin is a small to medium-sized tree 6-9 m tall with a spreading crown. The bark is light brown, nearly smooth, and generally thin with lens shaped areas along the stem.

Leaves large, up to 50 cm long, bipinnately compound with 10-35 pairs of leaflets, many oblong leaflets, each only 6-12 mm long by about 7.5-10 cm wide, and alternate along the stems. Leaves fold up under the night sky

Flowers showy, fragrant pink, about 3.75 cm long, that resembling pompoms and are arranged in panicles at the ends of branches.

Fruits are flat, straw-colored pods about 15 cm long containing light brown oval-shaped seeds about 1.25 cm in length.

The generic name commemorates the Florentine nobleman Filippo degli Albizzi, who introduced the plant into cultivation in the middle of the 18th century.

BIOLOGY

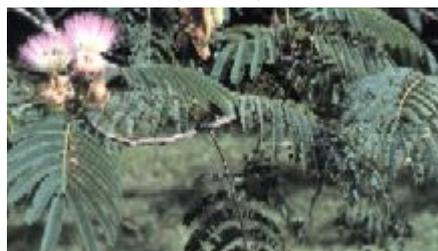
A. julibrissin is a hermaphroditic tree normally flowering from late spring to early summer, April to June in Nepal. Pods ripen in August-September and begin to disintegrate soon after, but remain on the trees into winter. Seeds are mostly dispersed below or around the parent plant, but can be dispersed further by water.



Bark (James H. Miller, USDA Forest Service, www.forestryimages.org)



Quick growing, flat-topped crown. Branches in lateral tiers. Long feathery fern-like leaves up to 45cm long - provide light shade. Spectacular in flower - from early summer to autumn. Ornamental used as avenue tree and lawn shade. (Ellis RP)



Detail of masses of pink, puff-ball shaped, feathery and silky flowers borne above the foliage (Ellis RP)

ECOLOGY

Prefers areas of high summer heat and is frost tolerant. In its native range, *A. julibrissin* prefers open sunny ravines. The Silk tree takes advantage of disturbed areas, often spreading by seed from nearby ornamentals or from contaminated fill dirt.

BIOPHYSICAL LIMITS

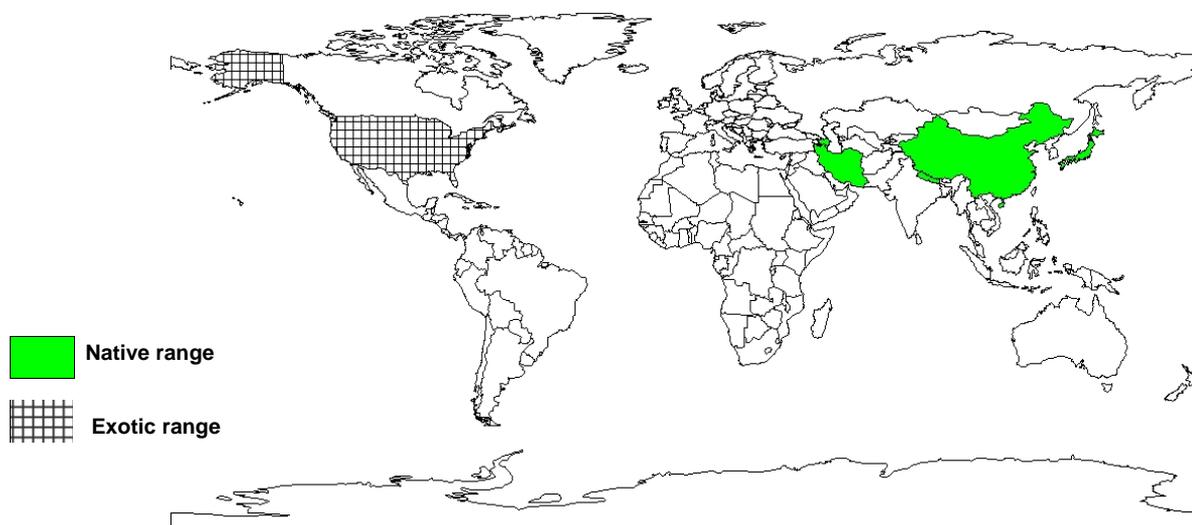
Altitude: 900 m, Mean annual temperature: 20-25 deg.C

Soil type: Prefers sandy loam-medium loam soil and can withstand high soil pH and salinity.

DOCUMENTED SPECIES DISTRIBUTION

Native: Azerbaijan, China, Iran, Japan, Korea, Republic of, Nepal, Taiwan, Province of China

Exotic: Greece, US



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

Fodder: The leaves are used as fodder.

Apiculture: The flowers provide nectar and pollen for bees.

Timber: The wood is used in furniture making.

Poison: Toxic amino acids in the seeds repelled or killed larvae of the polyphagous pest *Prodenia eridania* (Noctuidae). Crude saponin fraction of stem bark of *A. julibrissin* demonstrated cytotoxicity.

Medicine: The dried stem bark of *A. julibrissin* is used medicinally in China in the preparation of tonics and sedatives.

Other products: Leaf extracts of *A. julibrissin* digest casein components of milk resulting in large peptide fragments. *A. julibrissin* is the host of the lac insect [*Laccifer lacca*] which colonizes its shoots, feeding on accumulated carbohydrates. The insect produces lac used in the manufacture of lacquering material. Fertilizer treatments resulted in greater production of lac by *L. lacca*.

SERVICES

Erosion control: Cultivated on terrace edges in the Himalayas to prevent soil erosion.

Shade or shelter: Provides shelter in gardens.

Reclamation: Withstands drought and can adapt well in arid conditions. In Korea Republic the silk tree is a recommended native species for revegetation of felled forest slopes.

Nitrogen fixing: Enhances soil fertility by nitrogen fixation.

Soil improver: Leaf litter of the silk tree on decomposition replenish soil nutrients. In an experimental trial in the USA nutrient input-output balance of N, P, K, Ca and Mg was higher for alley cropping with *A. julibrissin* than for non-alley cropping systems.

Ornamental: The attractive fragrant/ pink flowers and fern-like leaves of mimosa leaves, which stay green until killed by frost make it an ideal landscape plant.

Intercropping: *A. julibrissin* should be avoided in intercropped systems, dense stands of mimosa severely reduce the sunlight and nutrients available for other plants.

TREE MANAGEMENT

The silk tree is fast growing, prefers full sun and wet soil. Seedlings transplant readily, and are very adaptable. The tree withstands drought, high pH, soil salinity and wind. Because of its aggressive colonizing attributes the silk tree can be an ecological threat to native species, some ways of curbing its spread include use of herbicides on young trees, bark girdling which is effective on large trees where the use of herbicides is impractical. Systemic herbicides such as glyphosate and triclopyr can kill entire plants.

GERMPLASM MANAGEMENT

Silk tree seeds have impermeable seed coats that allow them to remain dormant for many years. One study showed that 90% of the seeds were viable after 5 years. The optimum treatment time for *A. julibrissin* with sulphuric acid (specific gravity 1.84) was 40 minutes, yielding 98% germination. In an experimental trial germination of scarified seeds was 90% or over in all media; germination of non-scarified seeds was lowest (3%) in sterile agar and significantly higher in non-sterilized soil (30%).

PESTS AND DISEASES

A wilt disease caused by *Fusarium oxysporum* f.sp. *perniciosum*, has been reported in Greece and the USA. *Agrilus* sp. is the main stem-boring pest of *A. julibrissin*. *Bruchidius terrenus* is an important pest of *A. julibrissin* in Taiwan and China. Other identified pathogens are *Heterosporium albizziae* and silk tree leaf rust *Haploraavenelia japonica* causing silk tree leaf spot. A canker disease caused by an unidentified species of *Fusicoccum* causes great damage to trees. The root-knot nematode, *Meloidogyne incognita* also attacks the silk tree.

FURTHER READING

CABI. 2000. Global Forestry Compendium. CD-ROM. CABI

Gogue GJ and Emino ER. 1979. Seed coat scarification of *Albizia julibrissin* Durazz. by natural mechanisms. *Journal of the American Society for Horticultural Science*. 104(3): 421-423.

<http://www.nps.gov/plants/alien/fact/alju1.html>.

Ikeda T, et al. 1997. Cytotoxic glycosides from *Albizia julibrissin*. *Journal of Natural Products*. 60(2): 102-107.

Kakishima M, Lohsomboon P and Sato S. 1987. Life cycle and morphology of *Ravenelia japonica*. *Transactions of the Mycological Society of Japan*. 28(2): 189-196.

Kayastha BP. 1985. *Silvics of the trees of Nepal*. Community Forest Development Project, Kathmandu.

Kim KH, Lee SG and Yi CK. 1989. Unrecorded tree diseases found in Korea. *Research Reports of the Forestry Research Institute Seoul*. 38:150-157.

Lebedeva AM and Miroshnichenko E Ya. 1974. Effect of fertilizers on the carbohydrate metabolism of *Albizia julibrissin*. *Subtropicheskie-Kul'tury*. 1: 137-139.

Matta Machado R and Jordan CF. 1995. Nutrient dynamics during the first three years of an alleycropping agroecosystem in southern USA. *Agroforestry Systems*. 30(3): 351-362.

Qu-AiJun et al. 1995. Observations on the morphological and bionomic characteristics of *Agrilus* sp. on *Albizia julibrissin*. *Plant Protection*. 21(3): 22-23.

Rehr SS, Bell EA, Janzen DH and Feeny PP. 1973. Insecticidal amino acids in legume seeds. *Biochemical Systematics*. 1(1): 63-67. <http://www.nps.gov/plants/alien/fact/alju1.html>.

Wu L and Li SK. 1989. Fusicoccum canker, a new disease of *Albizia julibrissin*. *Forest Pest and Disease*. 2(34).

Xu BM, Gu Z. 1985. Effect of sulphuric acid treatment in breaking dormancy in hard seeds. *Plant Physiology Communications Zhiwu Shenglixue Tongxun*. 2: 22-25.

SUGGESTED CITATION

Orwa C, A Mutua, Kindt R, Jamnadass R, S Anthony. 2009 *Agroforestry Database: a tree reference and selection guide version 4.0* (<http://www.worldagroforestry.org/sites/treedbs/treedatabases.asp>)