

Salix babylonica

weeping willow

L.

Salicaceae

LOCAL NAMES

Chinese (chui liu); English (babylon weeping willow, weeping willow); French (saule pleureur de chine, saule pleureur, saule parasol, saule de Babylone); German (trauerweide, chinesische haengeweide, gräberweide, ränenweide, hängeweide); Italian (salice piangente, salice babilonese); Japanese (shidare-yanagi); Spanish (sauce llorón, sauce de babilonia); Trade name (weeping willow)

BOTANIC DESCRIPTION

Salix babylonica is a deciduous, short-lived tree to 20 m tall and d.b.h. of 60-80 cm. Stem furrowed, usually dividing near the ground, crown open, branches pendulous. Bark grey-black.

Leaves lanceolate to linear lanceolate, 9-16 cm long, 0.5-1.5 cm wide, margins finely serrate, slightly shiny, dark green above, grey-green with distinctly reticulate venation beneath. Leaf stalk 5-10 mm long, pubescent.

Flowers in short, terminal catkins on leafy peduncles. Male catkin is 1.8-3 cm long, 0.5-1 cm wide. Female catkin 1.5-2.5 cm long, 0.5 cm wide, appearing with leaves in April-May.

Fruit a yellowish-brown capsule, narrowly conic to 3-4 mm long, glabrous.

BIOLOGY

Weeping willow grows nearly all year round. Its sap normally begins to flow in mid-February while leaves begin to expand at the beginning of March. Leaf fall starts at the end of December. Blossoming starts prior to leaves or at the same time. Full-blossom appears about March 20 and fruit usually ripens from the middle and end of April to the beginning of May. Willows have a limited genetic variation, raising fears of large populations being affected in the event of a disease outbreak.



Branchlets hanging vertically, almost to the ground (Jooste M)



Habitat at Kepaniwai
Maui, Hawaii (Forest & Kim Starr)

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ECOLOGY

S. babylonica prefers moist environments and commonly occurs along water courses, on damp valley bottoms, and in depressions amidst sand. Weeping willow is a light-demanding species, so it has difficulty regenerating under forest canopies. It can even grow on wetlands. It tolerates flooding, and in extreme cases even submergence. Around lakes and beaches, weeping willow often forms a mixed willow-reed plant community.

BIOPHYSICAL LIMITS

Altitude: 5-2000

Mean annual temperature: 2–15 degC

Mean annual rainfall: 553 - 1680 mm

Soil type: *S. babylonica* can grow on a variety of soils, such as clay, sand and sludge deposit soils on beaches.

DOCUMENTED SPECIES DISTRIBUTION

Native: China

Exotic: Argentina, Australia, France, Germany, Hungary, Italy, Nepal, Netherlands, New Zealand, South Africa, Spain



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.

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PRODUCTS

Fodder: The leaves and tender shoots are used as fodder for cows and goats in some areas. The fodder compares favourably with lucerne. In a survey carried out in Bumthang district, Bhutan, in 1982, *Salix babylonica* was found to be among the preferred fodder trees by farmers.

Apiculture: The flowers are a good source of honey.

Fuel: Wood and branches of *S. babylonica* were traditionally used for fuelwood in China.

Fibre: *S. babylonica* is a source of pulpwood and produces good quality newsprint paper also used for wrapping papers and high grade Kraft paper. Branches are used for basket making.

Timber: Weeping willow wood is usually reddish-brown, light and soft, with a straight grain, and of moderate density (325-450 kg/cu. m). It is widely used for furniture, packing cases, agricultural tools, fibreboard, plywood and mine poles

Medicine: Leaves and bark have astringent and tonic properties. Catkins and young twigs antipyretic. A leaf infusion is given to rheumatics.

SERVICES

Erosion control: Planting the tree along riverbanks prevents soil and water erosion, wave-shock and minimizes sediment deposition. In New Zealand, willows are widely grown for soil conservation purposes, where they are the most abundant exortc species after *Pinus radiata*.

Shade or shelter: Weeping willow is an important tree species for farmland shelterbelts.

Ornamental: *S. babylonica* is also valuable as an ornamental garden and park tree. The male is mainly the one planted for ornamental purposes.

Pollution control: It tolerates high levels of sulfur dioxide.

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TREE MANAGEMENT

For pulpwood plantations or other small-stem timber forest stands, planting density ranges from 2200 to 3300 trees/ha, while a density of 1600-2200 trees/ha is used for mine timber production. The rotation of weeping willow varies according to the final product required. Trees aged 2 to 5 years old are harvested for cuttings to make planting stock; 5- and 7-year-old trees are cut for pulpwood. Seedling plantations grow slowly initially, but have a long life span and eventually produce large-sized timber. There is a significant difference in plantation growth between those established from seedlings and those originating from cuttings. The average height of an 8-year-old seedling stand is 8.3 m, but it is 17.8 m for a plantation from cuttings; average stem diameter is 14.3 cm and 42 cm, respectively.

Weeping willow has a very strong capacity to sprout. Young shoots can reach 3 m high in one growing season. Thus, sprouting stands will gradually form when trees are harvested by clear cutting. After 10 years, average height and stem diameter of shoot sprouts may be approximately 10 m tall and 12.3 cm, respectively.

GERMPLASM MANAGEMENT

There are more than 6 million seeds/kg. Seed storage behaviour is recalcitrant. The viability of air-dry seed is 5-10 days.

PESTS AND DISEASES

S. babylonica frequently suffers from serious insect pest damage. The pests, especially the borer insect, *Anoplophora glabripennis*, should be managed using integrated methods, particularly if this willow species is cultivated for pole timber.

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SUGGESTED CITATION

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