Populus euphratica

Oliv.

Salicaceae

bhan, bahan

LOCAL NAMES
Arabic (hodung,gharab,bhan,bahan); Chinese (huyang); English (Indian poplar,Euphrates poplar); Hindi (hotung,hondung,bhan,bahan); Trade name (bhan,bahan)

BOTANIC DESCRIPTION
Populus euphratica is a medium-size to large deciduous tree with rarely a straight stem; often bushy, but attaining a height of about 15 m and a girth of 2.5 m under favourable conditions. Bark on old stems is thick and rough, olive green, with irregular vertical figures; stem is often bent and nearly always forked; sapwood is white and broad; heartwood is reddish, often almost black at the centre. It is shallow rooted, the roots spreading widely.

Leaves are highly polymorphic; juvenile leaves 7-15 cm x 6-12 cm, narrowly oblong, usually entire; petiole 7-15 cm long; leaves on mature shoots 5-7.5 cm long, very variable, usually broader than long, rhombic or ovate, sharply lanceolate in the upper half, base 3-5 nerved; petiole 1-5 cm long, rather slender, usually with large glands at the top on either side.

Catkins lax, male 2.5-5 cm long, female 5-7 cm long.

Fruit ovoid-lanceolate capsule, 7-12 mm long; pedicel 4-5 mm. Seed minute, enveloped in silky hairs.

The generic name is the classical Latin name for poplars, possibly from ‘paipallo’ (vibrate or shake), or originating in ancient times when the poplar was called ‘arbor populi’ (the tree of the people), because in Rome it was used to decorate public places.

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ECOLOGY
In its natural habitat, P. euphratica is found in subtropical, broadleaved, hill forests, wet temperate, moist temperate deciduous forests and dry temperate forests. It requires a lot of light for normal development. Although now almost completely destroyed to supply firewood, throughout its vast range it had always constituted dense forests (mixed with willow, tamarisk, mulberry) along watercourses and their tributaries. It also grows on land that is seasonally flooded and that on which no other form of cultivation appears possible.

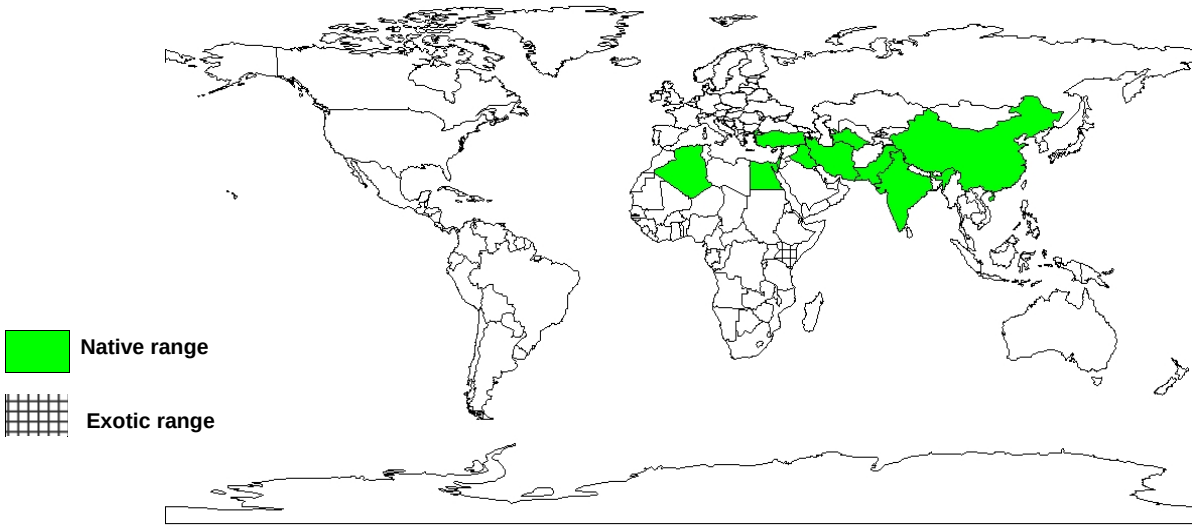
BIOPHYSICAL LIMITS
Altitude: Up to 4 000 m, Mean annual temperature: -5 to 52 deg. C, Mean annual rainfall: 75-200 mm

Soil type: It is found on rocky and hilly soils. The tree tolerates a high degree of salinity and brackish water. The soil pH best suited for the poplar is 5.0-6.5. Soils with impeded drainage and little aeration are not suitable.

DOCUMENTED SPECIES DISTRIBUTION

Native: Algeria, China, Egypt, India, Iran, Iraq, Israel, Libyan Arab Jamahiriya, Pakistan, Syrian Arab Republic, Turkey, Turkmenistan

Exotic: Kenya



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 afford good fodder for sheep, goats and camels.

Fuel: Its wood is moderately hard and light. The lops, tops, rejects, wastes and material derived through pruning are used as fuelwood. The calorific value is reported to be 5019 kcal/kg for sapwood and 5008 kcal/kg for the heartwood.

Fibre: P. euphratica holds excellent promise as a source of fibre for various grades of paper, fine paper, packing paper and newsprint.

Timber: The wood is easy to saw and works to a good finish. It is good for turnery and can be peeled off with a rotary cutter. Used for planking, lacquer work, artificial limbs, matchboxes and splints. It is also suitable for plywood, cricket bats, shoe heels and bobbins.

Poison: The bark is reportedly a vermifuge.

Medicine: The twigs are chewed and used for cleaning teeth.

SERVICES
Erosion control: P. euphratica comes up well in burnt areas and acts as a colonizer on exposed soils, eroded hill slopes and land slips.

Shade or shelter: The main branches are simple and spread fairly wide, resulting in a dense, conical crown with abundant foliage. It therefore acts as a windbreak and shelters the crops from insolation.

Reclamation: Due to its salt tolerance, it is the main species for afforestation of saline soils in sandy desert regions, for example in Mongolia, China.

Soil improver: The tree crown intercepts rain and checks soil erosion, thereby improving soil physical properties.

Ornamental: P. euphratica is largely used for roadside planting and lends decor to avenues.

Boundary or barrier or support: A single line of P. euphratica plants along field boundaries, roads, around orchards and in parks improves the landscape and additionally serves as a windbreak, benefiting the fruits and agricultural crops.

Intercropping: P. euphratica is one of the forest species considered ideal for intercropping with agricultural crops due to its characteristics such as leaflessness during winter, multiple uses, soil-enriching properties and compatibility with agricultural crops. The spacing under an agroforestry system is generally kept at 5 x 4 m or 5 x 5 m. Crops tried with this species include maize, wheat, cowpea, potatoes and sugarcane.

TREE MANAGEMENT
Planting is spaced at 2 x 3 m, although wider spacing is sometimes used to provide space for sowing alfalfa for improving soil and to provide fodder. The tree coppices well, and the few remnants of natural forests still being exploited for firewood are managed by coppice on short rotations of 1 or 2 years. Planted woodlots are adapted for treatment under coppice or coppice-with-standards, reproduction being obtained from roots or root suckers. The tree grows fast, with annual girth increments of 4-5.3 cm.

GERMPLASM MANAGEMENT
Seed storage behaviour is orthodox; hermetic storage at subzero temperatures with less than 6% mc recommended for long-term storage. P. euphratica seeds remain viable for about 3 weeks when kept at room temperature. Viability of seeds can be prolonged to 1 year if the seeds are stored in sealed bottles and kept in a refrigerator. Properly dried seeds with 4-5% mc stored in vacuum-packed jars and kept at a temperature of 0-20 deg. C remain viable for 3-5 years.

PESTS AND DISEASES
In the Near East, the tree is subject to attack by various beetles of the genus Capnodis and by Cuscuta monogyna. It is also attacked by a number of other defoliators, borers and gall-forming pests.

FURTHER READNG

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SUGGESTED CITATION

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