Populus ciliata

Wallich ex Royle

Salicaceae

parari pipal, paluch, palachh, Himalayan poplar

LOCAL NAMES
Bengali (bangikat); English (Himalayan poplar); Hindi (chalun,ban pipal,bagnu,chalni,safeda,pahari pipal,chalaun); Nepali (Bhote pipal,bangikat,bange kath); Trade name (Himalayan poplar,palachh,paluch,parari pipal)

BOTANIC DESCRIPTION
A mature Populus ciliata is a large deciduous tree with tall clean straight bole and broad rounded crown. The bark of young trees is smooth greenish-grey and that of the old trees dark brown with deep vertical fissures.

Leaves resemble those of pipal (Ficus religiosa) to earn it the name Pahari pipal; broadly ovate or ovate-lanceolate, with serrulate-crenate and ciliate margins, 7.5-18.0 cm long, base usually cordate, 3-5 nerved; petiole 5-12.5 cm long, compressed above.

Flowers in drooping raceme-like catkins appearing before or with leaves. Perianth of male flowers bell-shaped and female flowers bluntly toothed.

Capsule 3 or 4-valved and encloses an average of 100-150 seeds.

BIOLOGY
Flowers appear when the trees are still leafless. The wind-pollinated tree has separate male and female flowers borne on separate trees. The ratio of male to female trees varies with site, and on the whole, male trees number more than females in natural populations. The fruits ripen in about 3 months after pollination. Seed dispersal takes place from about the middle of June to the middle of July depending upon the climate of the locality. Early monsoon showers during the seed dispersal period cause the capsules to close. They re-open again to disperse seed in dry spell in July-August.

ECOLOGY
In the natural range of its distribution, P. ciliata prefers moist cool places, though it comes up on dry slopes also where the growth is generally very poor. The climate is broadly temperate, for example in blue pine and spruce forests.

BIOPHYSICAL LIMITS
Altitude: 1 700-3 000 m, Mean annual temperature: 0-24 deg. C, Mean annual rainfall: 660-2 970 mm

Soil type: P. ciliata grows in a wide range of soils ranging from sandy in river beds to clayey loam but best growth occurs on well aerated loamy soil with abundant moisture. Shallow soils with underlying hard or impervious layer support poor growth. It does not tolerate alkalinity and grows well on slightly acidic or neutral soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: India, Pakistan
Exotic: Afghanistan, China, France, Iran, Italy, Japan, Nepal, New Zealand, United States of America

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: It is lopped for fodder and stored to be fed to livestock during the times of scarcity.

Fuel: The lops and tops, rejects, wastes and material derived through intermittent prunings are used as fuelwood.

Fibre: P. ciliata provides paper for writing, wrapping and printing.

Timber: Wood is used for making boxes for packing grapes; also for poles, trucks and barrow-trays, coaches, furniture and cross-beams. Suitable for second quality match-splinters. The finishing quality of the wood is nearly equal to that of teak.

Medicine: Bark is a tonic, stimulant and blood purifier.

SERVICES
Erosion control: Successfully established from branches and stem cuttings, roots easily on shallow soils where other species cannot be established, has a reasonably fast growth rate and produces abundant strong lateral roots with little taper. It is therefore extensively used in China, Japan, the USA and New Zealand to bind soil as an erosion control measure.

Intercropping: Any traditional crops except paddy can be grown reasonably well in between the lines of poplars during the first 2 years. Subsequently, shade tolerant crops like ginger, turmeric and colocasia can be raised as less sunlight percolates to the ground during active growth period, when the crown covers most of the canopy. Short duration winter vegetables such as lentils and toria can be raised as most poplars are leafless during autumn.

Other services: In India, P. ciliata is used on an experimental basis that has successfully constituted temporary nurse stands as cover for young firs during regeneration of old stands.

TREE MANAGEMENT
P. ciliata is a light demander, pollards vigorously, has poor coppicing power except in the case of young trees, and produces root suckers abundantly. The trees growing in the open develop broad, long crowns and exhibit poor self-pruning. It is susceptible to fire especially seedling and saplings regeneration which are killed even by light fire; mature trees survive light ground fire but crown fire kills them. When the trees are managed for fodder, they are closely spaced and managed under an intensive coppice system. All-purpose management system involves a thinning in the 7th or 8th year, removing 50% of the tree for pulp production. Clear felling is done at 10-15 years. Regeneration of a new crop is through replanting. Besides depth, water-holding capacity is an important factor determining the establishment and growth of P. ciliata.

GERMPLASM MANAGEMENT
The seeds weigh about 15 million/kg; they lose viability rapidly under normal storage conditions of room temperature; total loss of viability has been reported after 3 weeks. Fresh seeds exhibit high viability giving a germination rate of up to 75-90%.

PESTS AND DISEASES
Leaf defoliators such as Pyragea cupreata and P. fulgurita have been recorded to become active during the rainy season and multiply extremely fast. A plant parasite, Loranthus elatus attacks P. ciliata in India. Leaf spot pathogens including Bipolaris mydis, Pseudocercospora salicia and Phorma macrostoma may cause premature defoliation. Incidences of ganoderma root rot have been reported.

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SUGGESTED CITATION

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