

LOCAL NAMES

Hindi (kakroi,kakring,kakra,kakkar,kakar singhi)

BOTANIC DESCRIPTION

Pistacia integerrima is a multi-branched, single stemmed, deciduous tree, up to 25 m tall. The tree has low/dense crown base and roots deeply.

Leaves large, up to 25 cm long, pinnate (frequently paripinnate) leaves bearing 2-6 pairs of lanceolate, long leaflets. The terminal leaflet is much smaller than the lateral ones or even reduced to a mucro.

Inflorescence red.

The fruits are globular, apiculate, 5-6 mm in diameter, purplish or blue at maturity and with a bony endocarp.

The name of *Pistacia* derives from the Persian name 'pisteh' or 'pesteh'. Classification within the genus *Pistacia* has been based on leaf morphology and geographical distribution.

BIOLOGY

This is a dioecious tree shedding its leaves during the dry season and is wind pollinated. Flowers from March-May and fruits from June-October. *Pistacia atlantica* and *P. integerrima* interbreed.

ECOLOGY

P. integerrima is mainly Asiatic and shows a preference for dry slopes with shallow soils. The tree does not tolerate fire and is strongly susceptible to acidic soils. However it is wind firm, termite resistant, frost hardy and moderately drought resistant.

BIOPHYSICAL LIMITS

Altitude: 800-1 900 m

Mean annual temperature:

Mean annual rainfall: 1 270 mm

Soil type: Prefers well drained deep entisols and inceptisols and is tolerant to heavy clay soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: India

Exotic: 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: Shoots and leaves used as medium quality fodder.

Fuel: Fuelwood and charcoal are obtained from *P. integerrima*.

Timber: Timber used in house construction, carving, furniture manufacture, farm implements, musical instruments and thatch. The timber can also be used in veneer and plywood manufacture.

Tannin or dyestuff: Dyestuff obtained from insect galls, bark and leaves.

Essential oil: The essential oil obtained by steam-distillation of Kakra Singi, the indigenous drug prepared from *P. integerrima* contains: alpha -pinene (25%), camphene (27%), di-limonene (4-5%), 1:8-cineol (10%), alpha -terpineol (20%), and aromadendrene (4-5 per cent.); also a small percentage of a lactonic stearoptene. 15% by volume of the oil is caprylic acid.

Medicine: *P. integerrima* galls are used in traditional medicine to treat coughs, asthma, diarrhoea, dysentery, fever, vomiting, appetite loss, nose bleeding, snake bites and scorpion stings. The plant extracts are used in treating livestock diseases.

Other products:

Pistacigerrimones C and D from *P. integerrima* have significant analgesic and anti-inflammatory activity.

SERVICES

Erosion control: Important in river bank stabilization and soil conservation.

Shade or shelter: *P. integerrima* provides considerable shade.

Reclamation: *P. integerrima* can be used in wasteland afforestation programmes.

Soil improver: *P. integerrima* is used for improved fallows and the leaves are used as green manure.

Ornamental: Grown as an ornamental, much appreciated for its crimson leaf colour in the fall.

Intercropping: *P. integerrima* is a multipurpose tree of agroforestry interest.

Pollution control: In India the tree is used in water purification.

TREE MANAGEMENT

Management by pruning, lopping, and pollarding improves the tree form factor of *P. integerrima*. The tree should be protected from browsers. *P. integerrima* seedlings are susceptible to strongly alkaline soils. This is a light demanding species. A nursery time of 12-18 months is recommended.

Rhizoctonia solani is controlled in the nursery by the addition of pentachloronitrobenzene [quintozene] in planting medium and by maintaining clean greenhouse benches.

GERMPLASM MANAGEMENT

Best results are found with the 2 cm sowing depth and with seeds treated with concentrated sulfuric acid for 20 min. The seeds have a germination rate of 30%. There are 8 000 to 19 000 seeds /kg. A pretreatment of soaking in water for 24 hours improves germination.

PESTS AND DISEASES

P. integerrima is susceptible to Verticillium wilt. *Rhizoctonia solani* AG-4 has been reported from pistachio rootstock seedlings. Some foliar diseases identified are: leaf spot caused by *Cercospora megaspermae*, leaf spot caused by *Septoria pistaciae*, yellow leaf rust caused by *Uraecium* sp. and brown leaf rust caused by *Pileolaria pistaciae*.

FURTHER READNG

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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>)