

Grewia asiatica

phalsa

L.

Tiliaceae

LOCAL NAMES

Bengali (phalsa,shunkri); English (Indian phalsa,phalsa); Filipino (bariuan-gulod); Hindi (phalsa,shukri,tadachi,dhaman,parusha); Khmer (pophlië); Lao (Sino-Tibetan) (nhap); Thai (po tao hai,yap khee thao,malai,lai khon); Trade name (phalsa); Vietnamese (cò-ke-á,c[of]-ke-[as])

BOTANIC DESCRIPTION

Grewia asiatica is a small deciduous tree or large straggling shrub, up to 4.5 m tall; bark rough, grey; branches long, slender, drooping, young ones densely coated with stellate hairs.

Leaves are alternate, simple, deciduous, broadly cordate to ovate, rather variable, up to 20 x 16 cm, base oblique, apex acute to acuminate, margins coarsely toothed, pubescent above, densely tomentose beneath, 5 principle nerves palmate, petiole up to 1.5 cm long.

Inflorescence in 3-5 flowered axillary cymes, clustered in groups of 2-8, 16-25 cm long. Receptacle 3 mm long, hairy in the upper half. Sepals 5, oblong, 1-5 cm, almost glabrous inside, 3-5-nerved. Petals 5, yellow, 6-7 mm long, equalling the androecium, with a raised gland 2 mm long, glabrous, with reticulate nervation.

Fruit a globose drupe. 1.8-2.2 cm in diameter, indistinctly lobed, red or purple, finely warty and with stellate hairs; flesh, soft, fibrous, greenish-white stained with purplish-red, tasting pleasantly acid. Seeds 1-2, hemispherical, 5 mm wide.

The genus was named after Nehemiah Grew (1641-1712), one of the founders of plant physiology.

BIOLOGY

Flowers develop only on the new shoots of the current growing season. The period between flowering and fruiting maturity is 45-55 days. Under subtropical conditions, there is a brief period of dormancy lasting 4-6 weeks when the plant sheds its leaves. *G. asiatica* begins to bear fruit after only 2 years, but does not produce marketable fruit until the 3rd year.

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ECOLOGY

The plant grows in both tropical and subtropical climates but will tolerate other climates, except at high altitude; however, it does best in regions having distinct summer and winter seasons. It is very hardy, and capable of existing under severe conditions, for example, it can withstand short periods of light frost and tolerate drought, and is therefore suitable for arid regions. In the absence of a prominent change of seasons the plant does not shed its leaves, flowers erratically throughout the year and fruits poorly. This limits its distribution in Southeast Asia.

BIOPHYSICAL LIMITS

Mean annual temperature: to 44 deg. C

Soil type: Phalsa can be grown on a wide range of soils, even those that are slightly alkaline. A rich alluvial soil is considered ideal, although the results obtained from clay or sandy soil may be satisfactory.

DOCUMENTED SPECIES DISTRIBUTION

Native: India, Nepal

Exotic: Bangladesh, Cambodia, Laos, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam



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

Food: The ripe fruits are eaten as a dessert. Their taste and flavour are very much liked and they fetch high prices. A refreshing drink prepared from the juice, commonly known as phalsa syrup, is considered a delicacy in northern India, throughout the hot summer months. The mucilaginous extract of the bark obtained after pounding in water is used to clarify sugarcane juice during the preparation of 'gur', the traditional brown sugar made in India.

Fibre: The fibrous bark is made into ropes.

Timber: *Grewia* yields a medium-weight to heavy hardwood with a density of 730-900 kg/cubic m at 15% mc. Heartwood pale grey to pale brown, not sharply differentiated from the sapwood; grain interlocked; texture fine; wood with some silver grain. The wood seasons well, is moderately soft to moderately hard, tough and moderately strong; it works satisfactorily with hand and machine tools. Non-durable when exposed to the weather or in contact with the ground, but durable for interior use. Under cover, the heartwood is moderately resistant to dry-wood termites. Wood is generally used for small articles where toughness is required, such as tool handles, spades, shafts of golf sticks, shoulder poles for carrying small loads, pestles, bows, billiards cues and shingles. In the Philippines it is regarded as a good substitute for 'lanutan' (*Hibiscus campylosiphon*) and used for vehicle bodies. In India, the wood is sometimes used for construction. The shoots obtained after annual prunings are used for making baskets, quite strong, to transport fruit and vegetables.

Medicine: According to Ayurveda, the ancient Indian treatise on medicine, the fruits are a cooling tonic and aphrodisiac; they allay thirst and burning sensations, remove biliousness, cure inflammation, heart and blood disorders and fevers. The fruit is also good against throat trouble. The bark is used as a demulcent. It cures urinary troubles and relieves burning in the vagina. The leaves also are used medicinally, chiefly for external applications.

SERVICES

Soil improver: In India, 5-year-old plantations of phalsa increased organic carbon, available nitrogen, phosphorus and potassium in the soil, and reduced calcium carbonate, pH and bulk density due to litter production greater than that of other fruits.

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TREE MANAGEMENT

If planted in infertile soil, a good amount of well-rotted farmyard manure should be placed around the planting hole. Weeding and judicious application of fertilizers and manure are recommended along with 2-3 irrigations. Pruning is an essential part of their cultivation, and it is recommended 1.2-1.35 m above ground level, as long as there is no risk of late frosts; it should be done every year as the new growth bears the fruit. It has to be harvested repeatedly during the fruiting season, which adds considerably to its cost. Fruit production increases by spraying gibberalic acid at full bloom. A 2nd spraying is done after 15 days. The annual yield is 3-5 kg/plant or 4.5-6 t/ha.

PESTS AND DISEASES

There is no serious pest or disease of this species. However, insect caterpillar attack is sometimes common and the sapwood is susceptible to *Lyctus* borers.

FURTHER READNG

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Verheij EWM, Coronel RE (eds.). 1991. Plant Resources of South East Asia No 2. Edible fruits and nuts. Backhuys Publishers, Leiden.

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>)