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# Babul (Kikar)- Desert Plant: Importance and Significance

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**ABSTRACT:** Babul tree is a common sight in desert and sub-desert regions in India. Known as *Vachellia Nilotica* in botany, this small, evergreen tree is associated with Goddess Durga, and finds several mentions in the Hindu mythology. It is also mentioned in the Quran as a symbol of the righteous. Native to Africa, the Middle East and the Indian subcontinent, this deciduous tree is from the Fabaceae family. It is widely grown in arid and semi-arid regions for its various uses. Babul tree has a spreading crown with thorny branches. It can grow up to 20 metre in height. Flaunting a greyish-brown, rough, and fissured bark, the tree carries feathery and pinnate leaves. Its small, pale-yellow flowers have a sweet fragrance. A slow-growing tree, Babul lives for about 100 years.

**KEYWORDS-**Babul, Kikar, desert, sub-desert, uses, significance

## I.INTRODUCTION

**Climate:** Well-adapted to hot and dry climate, these trees can tolerate temperatures up to 50°C. They can also withstand cold temperatures but not freezing ones.

**Rainfall:** Babul trees grow best in areas with an annual rainfall of 300-600 mm.

**Soil:** Well-drain sandy, or loamy soil is the best for the trees. Make sure there are no weeds and debris in soil before you plant the tree.

**Soil pH:** Babul can tolerate a range of soil pH levels, from 5.5 to 8.5.

**Planting:** The tree can be propagated from seeds, or cuttings. If growing from seeds, scratch them before planting to improve germination rates. If using a cutting, take it from young, healthy shoots and plant in a well-drain soil mix. If planting in bulk, plant them at least 3-4 m apart to allow them spread like a crown.

**Watering:** Drought-tolerant, Babul does not require frequent watering. Water them deeply once a week during the growing season, and sparingly during the dormant season.[1,2,3]

**Fertilisation:** Babul does not require frequent fertilisation. It can, however, benefit from a balanced fertiliser application during the growing season.

**Pruning:** Babul trees can be pruned to remove dead, or diseased wood, to shape the crown and promote growth. Pruning should be done during the dormant season.

**Pests and diseases:** Babul is susceptible to stem borers, leaf miners and aphids. Regular monitoring and prompt action can help prevent and control infestations.

**Harvesting:** The gum of Babul trees can be harvested by making incisions in the bark and collecting the exudate. Harvesting should be done during the dry season.

**Babul tree: Uses and benefits**

- The tree is the source of natural gum, that is used as a thickener and stabiliser in the food industry. Gum Arabic is also used as a binder in the pharmaceutical industry.

- The roots of the tree can help stabilise soil and prevent erosion.
- The wood of the tree is used for fuel, to make charcoal and construction purposes.
- The tree can fix nitrogen in soil and improve soil fertility. It is often grown in intercropping systems with crops, such as maize, sorghum and millet.[4,5,6]
- Drought-tolerant, this tree can survive in harsh environmental conditions. That makes it important for reforestation and afforestation projects in arid and semi-arid regions.

#### Babul tree: Medicinal uses

In traditional medicine, the bark, leaves, and pods of the tree are used to treat a wide variety of problems, including diarrhoea, dysentery, fever, and inflammation. The fruit is used for medicinal purposes in India because it contains antioxidants and nutrients, such as vitamins A and C.

## II.DISCUSSION

*Vachellia nilotica*, more commonly known as *Acacia nilotica*, and by the vernacular names of gum arabic tree,<sup>[5]</sup> babul,<sup>[6]</sup> thorn mimosa, Egyptian acacia or thorny acacia,<sup>[7]</sup> is a flowering tree in the family Fabaceae. It is native to Africa, the Middle East and the Indian subcontinent. It is also considered a 'weed of national significance' and an invasive species of concern in Australia, as well as a noxious weed by the federal government of the United States.<sup>[8]</sup>

#### Taxonomy

This species of tree is the type species of the Linnaean genus *Acacia*, which derives its name from Greek ἀκακία, *akakía*, the name given by early Greek botanist-physician Pedanius Dioscorides (c. 40–90 CE) to this tree as a medicinal, in his book *Materia Medica*.<sup>[9]</sup> The genus *Acacia* was long known not to be taxonomically monophyletic, and despite being the type species of that genus, *A. nilotica* has since been moved to the genus *Vachellia*, with the genus name *Acacia* being reserved for Australian species; the principle of priority, which would normally prevent such a taxonomic change, was waived with a majority vote by the International Botanical Congress in 2005. The renaming of the traditional *Acacia* to *Vachellia* remains controversial, especially in Africa, where *V. nilotica* is an iconic species and is widely referred to as "the acacia".<sup>[10]</sup> For the new classification of this and other species historically classified under genus *Acacia*, see *Acacia*.<sup>[7,8,9]</sup>

The genus name *Acacia* derives from ἀκακία, which may come from the ancient Greek word ἄκκις, *ákis*, "thorn", for its characteristic thorns,<sup>[11]</sup> or may have been borrowed from a pre-Greek language.<sup>[12]</sup> The specific epithet *nilotica* was probably given by Linnaeus from the tree's originally known range along the Nile river.<sup>[citation needed]</sup> In Australia the tree is known as a prickly acacia,<sup>[13]</sup> despite usurping Dioscorides' two millennia-old etymology, the Australian species classified as *Acacia* in Australia do not have thorns.

#### Description



Spring blossoms at Hodal in Faridabad District of Haryana, India

*Acacia nilotica* or *Vachellia nilotica* is a tree 5–20 m high with a dense spheric crown, stems and branches usually dark to black coloured, fissured bark, grey-pinkish slash, exuding a reddish low quality gum. The tree has thin, straight, light, grey spines in axillary pairs, usually in 3 to 12 pairs, 5 to 7.5 cm (3 in) long in young trees, mature trees commonly without thorns. The leaves are bipinnate, with 3–6 pairs of pinnulae and 10–30 pairs of leaflets each, tomentose, rachis with a gland at the bottom of the last pair of pinnulae. Flowers in globulous heads 1.2–1.5 cm in diameter of a bright golden-yellow color, set up either axillary or whorly on peduncles 2–3 cm long located at the end

of the branches. Pods are strongly constricted, hairy, white-grey, thick and softly tomentose. Its seeds number approximately 8000/kg.<sup>[14]</sup>

#### Distribution

Acacia nilotica or Vachellia nilotica is native from Egypt, across the Maghreb and Sahel, south to Mozambique and KwaZulu-Natal, South Africa, and east through the Arabian Peninsula to the Indian subcontinent and Burma. It has become widely naturalised outside its native range including Zanzibar and Australia.<sup>[15]</sup> It is spread by livestock.<sup>[13]</sup>

#### Uses



Seed pods



Gum arabic exuding



Trunk at Hodal in Faridabad District of Haryana, India

#### Forage and fodder

In part of its range smallstock consume the pods and leaves,<sup>[16]</sup> but elsewhere it is also very popular with cattle. Pods are used as a supplement to poultry rations in India. Dried pods are particularly sought out by animals on rangelands. In India branches are commonly lopped for fodder. In West Africa, the pods and leaves are considered to have anthelmintic properties on small ruminants and this has been confirmed by in vitro experiments on nematodes.<sup>[16]</sup> In Kano of Nigeria, acacia pods have traditionally been used to dye leather a reddish-tinge.<sup>[17]</sup>

#### Tooth brushing

The tender twig of this plant is used as a toothbrush in south-east Africa and the Indian subcontinent.<sup>[18]</sup>

#### Gum arabic

The exudate gum of this tree is known as gum arabic and has been collected from the pharaonic times for the manufacture of medicines, dyes and paints. In the present commercial market, gum arabic is defined as the dried exudate from the trunks and branches of *Senegalia* (*Acacia*) *senegal* or *Vachellia* (*Acacia*) *seyal* in the family Leguminosae (Fabaceae).<sup>[19];4</sup> The gum of *A. nilotica* is also referred to in India as Amaravati gum[10,11,12]

#### Lumber

The tree's wood is "very durable if water-seasoned" and its uses include tool handles and lumber for boats.<sup>[21]</sup> The wood has a density of about 833 kg/m<sup>3</sup>.<sup>[2]</sup>

#### Food and medicine

In India it's used as an ingredient in various dishes.

The Maasai people eat both the inner bark (phloem) and the fruit pulp boiled in water. They also use this plant medicinally to treat sore throat, cough, chest pains etc.<sup>[22]</sup>

In Northern Nigeria it is called bagaruwa in Hausa. Medicinal uses include soaking the tender bark in water to be taken against dysentery and pile. The fruits are ground together with the seeds and taken with honey as treatment against stomach ulcers.

#### Phytochemistry

Two new antiprotozoal diterpenes have been isolated from the root bark of *Acacia nilotica*.<sup>[23]</sup>

#### Propagation

There are 5000–16000 seeds/kg.

### III.RESULTS

Babool is a toothpaste brand which was launched in India by Balsara Hygiene in 1987.<sup>[1]</sup> Babool is made from the bark of the Babool tree, which has traditionally been used to clean teeth in India.<sup>[2]</sup> The brand was positioned as an economic toothpaste with the tagline "Babool Babool paisa vasool".<sup>[3]</sup> Babool was relaunched with the tagline "Begin a great day, the Babool way" in 2002, when Babool was Balsara's biggest brand.<sup>[2]</sup> In 2005, Babool was sold by Balsara to Dabur along with other Balsara toothpaste brands Promise and Meswak in a ₹1.43 billion (US\$17 million) deal.<sup>[4][5]</sup> As of 2007, the Babool brand was valued at ₹1 billion (US\$12 million). A teeth-cleaning twig (in India: datun<sup>[1]</sup>) is an oral hygiene tool made from a twig from a tree. It can help to prevent tooth decay and gum disease.[13,14,15]

#### History

Chew sticks are twigs or roots of certain plants that are chewed until one end is frayed. This end can be used to brush against the teeth,<sup>[2]</sup> while the other end can be used as a toothpick.<sup>[3]</sup> The earliest chew sticks have been dated to Babylonia in 3500 BCE<sup>[3]</sup> and an Egyptian tomb from 3000 BCE;<sup>[2]</sup> they are mentioned in Chinese records dating from 1600 BCE<sup>[3]</sup> In the Ayurvedas around 4th century BCE and in Tipitaka, in the Buddhist Canon around the 5th century BCE in India.<sup>[4][5]</sup>

The Indian way of using tooth wood for brushing is presented by the Chinese Monk Yijing (635–713 CE) when he describes the rules for Monks in his book:<sup>[6]</sup>

Every day in the morning, a monk must chew a piece of tooth wood to brush his teeth and scrape his tongue, and this must be done in the proper way. Only after one has washed one's hands and mouth may one make salutations. Otherwise both the saluter and the saluted are at fault. In Sanskrit, the tooth wood is known as the dantakastha—danta meaning tooth, and kastha, a piece of wood. It is twelve finger-widths in length. The shortest is not less than eight finger-widths long, resembling the little finger in size. Chew one end of the wood well for a long while and then brush the teeth with it.[16,17]

A wide variety of plants can be used as dantakastha.<sup>[7]</sup>

In Africa, chew sticks are made from the tree *Salvadora persica*, also known as the "toothbrush tree". In Islam, this tree is traditionally used to create a chew stick called miswak, as frequently advocated for in the hadith (written traditions relating to the life of Muhammad).<sup>[8]</sup>

In South India, neem is used as a teeth cleaning twig. Neem, in full bloom, can aid in healing by keeping the area clean and disinfected.

Traditional Sikhs still use datun today as it is written in their scriptures:

ਦਾਤਨ ਕਰੇ ਨਿਤ ਨੀਤ ਨਾ ਦੁਖ ਪਾਵੈ ਲਾਲ ਜੀ ॥ (੨੩)

("Dear/beloved, natural twig, brush everyday, and pains you shall never get." (23))

—Guru Gobind Singh, Tankhah Naama,<sup>[9]</sup> as written down by Bhai Nand Lal

Babul e kihar in India is the name of a plant defined with *Acacia nilotica* in various botanical sources. This page contains potential references in Ayurveda, modern medicine, and other folk traditions or local practices. It has the synonym *Mimosa arabica* Lam. (among others). [18,19]

Example references for further research on medicinal uses or toxicity (see latin names for full list):

- Bulletin de la Société Botanique de France (1928)
- Contributions from the United States National Herbarium (1905)
- Species Plantarum, ed. 4
- An introduction to the study of Oriya. (1872)
- First lessons in Oriya. (1912)
- Flora Aegyptiaco-Arabica (1775)

If you are looking for specific details regarding Babul e kihar, for example side effects, pregnancy safety, health benefits, chemical composition, diet and recipes, extract dosage, have a look at these references.

#### IV. CONCLUSION

The Babul tree (*Vachellia nilotica*), also known as the *Acacia nilotica*, stands as a botanical marvel revered for its resilience, cultural significance, and ecological importance. Indigenous to the Indian subcontinent and parts of Africa, this iconic species thrives in arid and semi-arid regions, where its hardy nature and adaptive traits make it a symbol of endurance and vitality.

With its distinctive thorny branches and feathery foliage, the Babul tree presents a striking silhouette against the barren landscapes it inhabits. Its yellow, spherical flowers bloom in abundance, attracting pollinators and adding a burst of color to its surroundings. The tree's rough, greyish bark conceals a treasure trove of traditional remedies and ecological benefits.

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Cultural Significance:

The Babul tree holds deep cultural significance in the traditions, folklore, and spiritual practices of South Asian communities, where it has been revered for millennia as a symbol of protection, prosperity, and spiritual enlightenment. In Hindu mythology, the Babul tree is associated with various deities and revered as a sacred symbol of resilience and endurance.

Moreover, the Babul tree features prominently in traditional rituals, ceremonies, and social customs, where its branches are used to construct sacred altars, decorate festive spaces, and provide shade during religious gatherings. Its presence in village commons and temple precincts serves as a focal point for communal

gatherings and cultural celebrations, fostering a sense of belonging and spiritual connection among devotees and worshippers.

#### Traditional Uses:

The Babul tree's versatile bark, leaves, and pods have been utilized for centuries in traditional medicine systems for their medicinal properties and therapeutic benefits. Extracts from the bark are valued for their astringent, antiseptic, and anti-inflammatory properties, making them valuable ingredients in herbal remedies for various ailments, including gastrointestinal disorders, dental problems, and skin conditions.

Additionally, Babul leaves and pods are used to prepare herbal decoctions, poultices, and infusions, which are consumed or applied topically to alleviate pain, promote healing, and enhance overall well-being. The tree's thorny branches are also used as a natural toothbrush and oral hygiene aid, reflecting its multifaceted utility in indigenous healing practices.

#### Ecological Role:

Beyond its cultural and medicinal significance, the Babul tree plays a vital ecological role in its native habitats, where it serves as a keystone species in arid and semi-arid ecosystems. Its deep-rooted system helps stabilize soil and prevent erosion, making it well-suited for land reclamation and desertification control efforts.

Moreover, the Babul tree's nitrogen-fixing ability enriches soil fertility and promotes the growth of nitrogen-demanding plants, thereby enhancing ecosystem productivity and biodiversity. Its thorny branches provide shelter and protection to wildlife, while its nutritious foliage serves as a valuable forage resource for grazing animals, highlighting its importance in sustaining ecosystem services and supporting livelihoods in marginal landscapes.

#### Conservation Challenges:

Despite its ecological and cultural importance, the Babul tree faces numerous conservation challenges, including habitat loss, overgrazing, and unsustainable land-use practices. Conversion of Babul forests for agriculture, urbanization, and infrastructure development threatens the survival of this iconic species and the ecosystems it supports.

Efforts to conserve and protect Babul forests are essential to safeguarding their ecological integrity and cultural heritage. Conservation initiatives focused on sustainable land management, habitat restoration, and community-based conservation can help mitigate these threats and ensure the long-term survival of the Babul tree and the ecosystems it sustains.

#### Community Engagement:


Engaging local communities and indigenous peoples in conservation efforts is crucial to the success of conservation initiatives for the Babul tree. By empowering communities to participate in sustainable forest management, livelihood diversification, and alternative income-generating activities, stakeholders can foster a sense of ownership and stewardship over natural resources.

Furthermore, incorporating traditional knowledge and indigenous practices into conservation strategies can enhance their effectiveness and promote cultural resilience. By recognizing the intrinsic connection between culture and ecology, conservation efforts can become more holistic and inclusive, benefiting both people and the planet.

Babul tree stands as a symbol of resilience, cultural heritage, and ecological vitality in the landscapes of South Asia and beyond. Its rich legacy and multifaceted significance underscore the importance of conserving and protecting this iconic species for future generations.

By embracing sustainable practices, fostering community engagement, and promoting the preservation of traditional knowledge, stakeholders can ensure the continued survival of the Babul tree and the invaluable ecosystem services it provides. In doing so, we honor not only the natural beauty of the Babul tree but also the enduring bond between culture, ecology, and human well-being.[20]

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