**Bischofia javanica**: A new record to the Flora of Pakistan

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**ABSTRACT**

A pretty tree growing in the main campus GC University Lahore was identified as *Bischofia javanica* Blume (Bishopwood Tree) of family Euphorbiaceae. The tree is characterized by red sap and bark and trifoliate leaves. The voucher plant specimen was preserved in Dr. Sultan Ahmad Herbarium, GCU Lahore, Pakistan for further reference. This tree species has not been reported in Flora of Pakistan; therefore, the present report is a new record in the same.

**Key words:** *Bischofia javanica*, Bishopwood Tree, Family Euphorbiaceae, Flora of Pakistan

**INTRODUCTION**

Family Euphorbiaceae commonly called Spurge family is a large family of flowering plants containing 300 genera and 500 species and is the sixth largest family among anthophyta. It is a sub-cosmopolitan family with strong representation in humid tropics and sub-tropics. In Pakistan this family is represented by many exotic species (Radcliffe-Smith, 1986).

The genus *Bischofia* was named after the name of G.W. Bischoff, a botanist and entomologist in Royal Academy Amsterdam (Parker, 1956). The genus was first described by Blume (1826–1827) in Bijdr. 1168 and representing only two species, *Bischofia javanica* Blume and *B. polycarpa* (H. Léveillé) Airy Shaw (Shu et al., 2008). Currently this genus has been placed in family Phyllanthaceae, which is split apart from Euphorbiaceae and consisting of *Phyllanthus*, *Antidesma*, *Glochidion*, *Bridelia*, *Cleistanthus*, etc. Phyllanthaceae having various growth forms is mainly identified by the finely-cracking bark, absence of latex, usually 2-ranked and pinnately-veined leaves lacking glands, and dehiscent fruit with persistent columella and two ovules in each carpel. *Bischofia javanica* is widely distributed in the Pacific Islands, Malesia, SE Asia, Southern China, possibly also in Tonga and Samoa including Taiwan, Southern Japan, Myanmar, and India. It is well-known in New Caledonia, Tonga, Rarotonga, Fiji, Niue, Vanuatu, and Samoa and is usually a dominant tree in some forests in Cook Islands of Rarotonga (Whistler, 1991; Smith, 1981).

*B. javanica* is native to the Chinese provinces of Kwangtung, Fukien, Kweichow, Yunnan and Hupeh and may also be to Burma, India, the Andaman Islands, tropical Australia, Malaysia and Polynesia. In India, tigers are found clearing their claws by digging them into the soft, astringent bark of the Bishopwood Tree. Throughout its natural range it occurs from sea-level to an altitude of 5,000 ft and is often associated with teak (Morton, 1984).

Naturally *B. javanica* found in *Myristica* lowland rain forest begins at the landward edge of the coastal forest Eua Island, Tonga and is leading dominant

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with *Dendrocnide harveyi* (Drake et al., 1996). *B. javanica* is also found in alluvial plains semi-evergreen forests along with other deciduous species, i.e. *Aglaia spectabilis, Alnathus integrifolia, Artocarpus chalasha, Canarium strictum, Castanopsis indica, Chukrasia tabularis, Duabanga grandiflora, Dysoxylum gobaru, Harpulia arborea, Phoebe hainsiana, Terminalia myriocarpa*, etc. in India and Lahore, Pakistan comprised mainly the flat alluvial Plains of Indus covering the major part of Punjab having hot dry summers and mild winters with maximum daily temperature in summer, 41-46°C (Jalali & Jamzad, 1999; Nasir & Rafiq 1995).

*B. javanica* was introduced as an ornamental tree in main campus GC University Lahore, Pakistan in 1991 and since then it is thriving very well, producing flowers and fruits. This tree species has not been reported by Chaudhary (1969), Stewart (1972) and Radcliffe-Smith (1986) while documenting the Flora of Pakistan.

**Description of *Bischofia javanica* Blume**

An evergreen, fast growing tree, upto 35m tall with cylindrical trunk and light-brown to grayish, shallowly and narrowly fissured bark. Stem straight with red to dark brown heartwood and glabrous branchlets. Leaves usually palmately 3-foliate rarely 5-foliate; stipules caducous, membranous, lanceolate, upto 0.5cm long; petiole 8–20cm long, pulvinate; terminal petiolo 1–5cm long, lateral petiolo 0.5–2cm; leaflet ovate, elliptic, obovate, or elliptic-oblong, papery, minutely pubescent on nerves, glabrescent, base broadly cuneate to obtuse, 7–15 x 4–8 cm in size; crenate with 2 or 3 teeth per cm, apex acute or acuminate; lateral nerves 6-8 pairs. Flowers green in axillary, paniculate clusters; Male flowers 2.5mm in diameter; sepals membranous, ladle-shaped, semi-orbicular, adaxially concave, abaxially pubescent outside; petals 0; stamen 5; filaments short; pistillode short, broad, peltate, pubescent; anthers large, dehiscing lengthwise; peduncle upto 13cm, pubescent to glabrous; Female flowers with sepals similar to male but oblong-ovate, margins membranous; ovary smooth, glabrous, exerted, tri-locular; styles 3, linear, entire; peduncle 15–27cm long. Fruits globose or subglobose, smooth, upto 1cm in diam., brownish. Seeds oblong, brown to black, smooth, shining, upto 5mm in length (Plate 1).

**Syn.:** *Bischofia trifoliata* (Roxb.) Hooker; *B. leptopoda* Muller Argoviensis; *B. oblongifolia* Decaisne; *B. cumingiana* Decaisne; *B. roeperiana* Decaisne; *B. toui* Decaisne; *Andrachne trifoliata* Roxb.; *Microelus roeperianus* (Decaisne) Wight & Arnott; *Stylodiscus trifoliatus* (Roxb.) Bennett.

**Vern.:** Bishopwood, Javawood, Java Cedar (English), Paniola (India), Koka (Polynesia), Tuai (Philippines) and ‘o’a (Samoa).

**Flowering period:** April–May; **fruiting period:** August–October; **Voucher No. SAH. 2214**

**Ethnobotany**

Economically the plant is very useful and can yield:

1. **Useful timber**

   According to Morton (1984) the main asset value of the bishopwood tree is because of its source of useful timber-wood in India, Burma, Taiwan, East Africa and South Africa which somewhat resembles walnut tree (*Juglans regia*)
with strong vinegar odor when freshly cut and heartwood is dull red-brown, usually with a wavy grain; hard, strong, medium-heavy (45 lb/ft3), fairly durable indoors or out and under water. It is also used for piling, bridges, boats, wells, railway sleepers, buildings, furniture, carving and pencil making. Durability is prolonged by preservative treatment but the heartwood is strongly non-absorbent. On preservative treatment the wood lasts for 15 yrs, otherwise only 4-5 yrs. The wood is easy to work and polish and may not warp or crack on gradual air drying.

2. Firewood
   The plant is locally called Kaijal in Nepal and stem is used as firewood (Rijal, 2011).

3. Dye yielding
   The tree locally called Urium is common in Eastern Arunachal Pradesh in tropical and mixed evergreen forests (Mahanta & Tiwari, 2005). Its bark & leaves are used to produce natural dyes. The bark contains 16% tannin and yields a brown dye commonly used in Samoa for making designs on tapa cloth (Christopherson, 1935).

4. Medicinal
   Leafs and buds are used in tonsillitis and throat pain where as infusion of young shoot & leaves is taken orally against diphtheria in tribal area, Mizoram, India (Rai and Lalramghinglova, 2010). In Tamil Nadu, India stem bark of the tree after mixing with coconut oil is applied over head to stimulate hair growth (Ignacimuthu et al., 2006). In Western Mizoram, India the plant is locally called Khuanghtli and its leaf juice is used for the treatment of sores (Lalfakzuala et al., 2007). Ground bark is used for abortion (Bourdya & Walterb, 1992). In Assam (India) the decoction of tree bark is used for curing diarrhoea and dysentery (Purkayastha et al., 2007). According to Das et al. (2012), the leaves contain vitamin C while bark tannin. In Fiji, the leaf is eaten or the leaf decoction is imbibed to cure tonsillitis and the inner bark is rubbed on urticaria caused by stinging hairs of nettle-like plants (Altschul, 1973). According to Japanese investigators report, 136 mg/100g ascorbic acid was reported (Anonymous, 1948).

Conclusion

Keeping in view the suitable environmental conditions in Lahore for planting and ethnobotanical significance of *Bischofia javanica* Blume, i.e. useful timber, dye yielding, firewood, avenue tree and medicinal, the plant may be planted in and around Lahore.
Plate 1: *Bischofia javanica* Blume


REFERENCES


