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We are committed to empowering farmers, businesses, and environmentalists with premium bamboo planting material that contributes to ecological balance and economic growth.

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### ➤ Bamboo Species

*Bambusa tulda*, commonly known as **Bengal Bamboo** or **Indian Timber Bamboo**, is a fast growing medium-sized tropical clumping bamboo native to the Indian subcontinent, Indochina, Tibet, and Yunnan.

It is considered to be one of the most valuable multipurpose bamboo species, which usually grows up to a height of 20 m with culm diameters between 5-10 cm. In India it is used extensively by the paper pulp industry, but due to its nearly solid culms it is also an excellent and strong timber that can be used in construction and scaffolding.

#### Plant Info

<b>Scientific Name</b>	<i>Bambusa tulda</i>
<b>Synonyms</b>	Dendrocalamus tulda, Bambusa macala, Bambusa trigyna
<b>Common Names</b>	Bengal Bamboo, Indian Timber Bamboo, Spineless Indian Bamboo
<b>Family</b>	Poaceae
<b>Tribe</b>	Bambuseae
<b>Genus</b>	Bambusa

Plant Info	
Height	6-20 m
Diameter	5-10 cm
Growth Habit	Dense Clumping
Colour	Light green or greyish white when young.
Internodes	40-60 cm
Wall thickness	10-20 mm. Occasionally solid near the base.
Branches	Several or many clustered branches with 1-3 larger branches.
Leaves	7-17 cm long, 7-12 mm wide.
Climate	Tropical - Subtropical
Exposure	Full Sun - Partial Sun
Hardiness	-1°C
Soil	Loamy and alluvial soils, fertile and well drained.
Water Needs	Average.
Planting Distance	<ul style="list-style-type: none"> <li>• Every 3 m for screening.</li> <li>• 5 x 5 m for culm production.</li> </ul>
Edibility	(3 of 5)
Flowering Cycle	15-60 years
Origin	Bangladesh, Bhutan, China, India, Laos, Myanmar, Nepal, Thailand, Vietnam.
Uses	Construction, Scaffolding, Furniture, Basketry, Mats, Household Utensils, Handicrafts, Paper Pulp, Wind Break

#### ➤ Rhizomes

*Bambusa tulda* has short pachymorph rhizomes which means that it grows in densely tufted clumps.

#### ➤ Culms

- The slightly drooping culms of *Bambusa tulda* are usually between 6-20 m tall with an average diameter of 5-10 cm. The culms have 36-60 cm long internodes



which are very thick walled (1-2.5 cm at breast height and nearly solid at the base).

- Young culms are covered with white blooms which gives them a dull green colour. Mature culms have a mid-green or greyish green colour and sometimes present 2 or 3 faint yellow stripes at the internodes near the base.
- The nodes of this bamboo are slightly swollen, with bands of white silky hairs above and below the sheath scar. Basal nodes have short aerial roots.

#### ➤ **Culm Sheaths**

The triangular culm sheaths of *Bambusa tulda* are on average 15 cm long by 25 cm wide, with a conical blade of around 5–10 cm length. Culm sheaths are straw-coloured and covered with appressed blackish-brown hairs on the upper surface. The sheaths fall off early.

#### ➤ **Shoots**

The young shoots are yellowish green in colour with a powdery top. Shoots are slightly bitter and are suited to be pickled prior to being eaten.

#### ➤ **Branches**

*Bambusa tulda* develops many clustered branches per node, usually with 3 larger dominant branches. The lower parts of the culm (ca. from the 4th node up) are characterized by very predominant side-branches.

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#### ➤ **Leaves**

The lance-shaped leaves of *Bambusa tulda* are 15-25 cm long by 2-4 cm wide. The midrib of the leaf-blade is visible and has 12-20 secondary veins.

#### ➤ **Growth**

Shoots start to grow at the beginning of rainy season and it takes them approximately 1 month to emerge above the ground. *Bambusa tulda* is a fast-growing bamboo as the shoots can grow up to 70 cm per day. Culms complete their growth within 2-3 months after they emerge as shoots.

➤ **Habitat**

- ***Bambusa tulda*** is a tropical lowland bamboo. In its natural range it commonly occurs as an undergrowth in mixed deciduous forest, in moist alluvial flat land, valleys, and along streams or river banks up to an altitude of 1500 m. In moist areas, it often grows together with ***Schizostachyum pergracile***, in drier parts with ***Dendrocalamus strictus***.
- ***Bambusa tulda*** grows best in moist areas with a mean annual rainfall between 1,200 - 2,500 mm (tolerates 700 - 4,500 mm) and with average daytime temperatures between 22°C to 28°C (tolerates 4°C to 37°C). It prefers semi-shade areas but also succeeds in full sun. Soils should be loamy, fertile and well drained with high reserves of organic matter, nitrogen, calcium, potassium and phosphorus. Optimal pH is in the range of 5 - 6.

➤ **Flowering**

***Bambusa tulda*** normally flowers gregariously for a period of 2 years in a cycle of 15-60 years, and produces viable seed. However, it also often flowers sporadically or in small groups, without an obvious cycle.

➤ **Propagation**

- ***Bambusa tulda*** can be propagated by seed, rhizome cuttings, culm cuttings and by tissue culture. Under normal conditions, seed remains viable for only 1 month. When stored dry (in a desiccator over silica gel) viability can be extended up to 1.5 years.
- The germination rate of ***Bambusa tulda*** seeds is usually around 70% and takes place fairly quickly as long as the seeds are of good quality, though it can take 3 - 6 months. In countries where seeds occur, young seedlings with 2-4 leaves are usually collected from the forest floor and grown in a nursery until they are large enough to plant out.
- Propagation by rhizome cuttings with direct planting in the field is a very successful propagation method (survival more than 90%). Rhizome parts should be taken at the beginning of the rainy season from 1–2 year old culms and planted in pits of 60 cm<sup>3</sup> at a spacing of 8 m × 8 m.



- Propagation by culm cuttings gives varying result. The best chance to success is to cut 1–2year old culms bearing 3–4 nodes with viable buds. Plant the 1.5 to 3 m long sections horizontally in sandy soil at 5–10 cm depth. It takes about 9 months to obtain rooted plants from culm cuttings.
- Branch cuttings can also be successful, but air and ground layering are not.
- Dividing seedlings is another good propagation method. Take divisions from 9-month-old seedlings with at least three culms per clump, each bearing roots and rhizomes. The secret is to cause as little root disturbance as possible. Plant the divisions in a fertile well-drained substrate and grow them under shade while regularly applying mist to the foliage. Once a good root system has been developed (which can take a year or more), the plants can be planted at their permanent location.

➤ **Diseases and Pests**

*Bambusa tulda* is slightly to moderately susceptible to bamboo blight (*Sarocladium oryzae*) which attacks young bamboos during, or soon after elongation growth, usually followed by secondary insect infestation which increases the damage. Drenching the soil of affected clumps with a fungicide (e.g. dithane M45) before the rains start improves the survival rates of new culms.

➤ **Harvesting**

- Harvesting mature *Bambusa tulda* culms may start 5–7 years after planting. Normally 3–4 year old culms are harvested, retaining at least 3–6 evenly spaced culms per clump. A 4 year felling cycle is often adopted.
- After harvesting, the culms are traditionally submerged in running water for 10–20 days to improve its resistance against powder-post beetles. The culms are then air\_dried for 1.5 - 3.5 months.

➤ **Yield**

The annual yield of dry mature culms is about 3 tons per hectare.

➤ **Uses**

- ***Bambusa tulda*** is one of the most useful *Bambusa* species because of its near solid culms and very strong timber. In India and Bangladesh, it is a major commercially exploited bamboo.
- As a raw material, ***Bambusa tulda*** is extensively used by the Indian paper pulping industry. It is suitable for the manufacture of wrapping, writing and printing paper.
- The culms are also used for reinforcing concrete, scaffolding, as a structural timber in construction, furniture, basketry, mats, household utensils, fishing rods, handicrafts, and bamboo lacquer ware. In Arunachal Pradesh, the species is used for Bansuri\_flute making, locally called "Eloo". During the Dree\_festival priests' belief that the sound will keep the evil spirits away.
- The shoots of ***Bambusa tulda*** are edible, but taste slightly bitter and are therefore often pickled. Fermented shoots are rich in phytosterols and can be used for the production of sterol drugs to lower cholesterol levels.
- In agroforestry, ***Bambusa tulda*** is often planted as a wind-break around farms and fields.

#### ➤ **Mechanical Properties**

- Density 722 kg/m<sup>3</sup> at a moisture content of 12% (air dry).
- Fibre stress at elastic limit 26.2 N/mm<sup>2</sup> (green) - 38.1 N/mm<sup>2</sup> (air-dry).
- Modulus of rupture 51.1 N/mm<sup>2</sup> (green) - 66.7 N/mm<sup>2</sup> (air-dry).
- Modulus of elasticity 10.0 N/mm<sup>2</sup> (green) - 12.3 N/mm<sup>2</sup> (air-dry).
- Compression strength parallel to grain 40.7 N/mm<sup>2</sup> (green) - 68 N/mm<sup>2</sup> (air-dry).

#### ➤ **Origin**

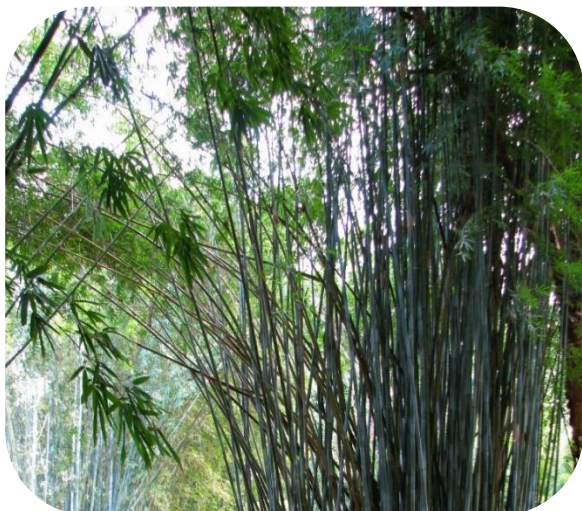
- **Native to:**  
Bangladesh, Bhutan, China, India, Laos, Myanmar, Nepal, Thailand, Vietnam



- **Introduced into:**

Australia, Brazil, Colombia, Ecuador, Indonesia, Iraq, Philippines, Puerto Rico, USA

**Photos:**







# DENDROCALAMUS LATIFLORUS

## ➤ Bamboo Species

*Dendrocalamus latiflorus* also known as **Taiwan Giant Bamboo** is a giant tropical and subtropical clumping species native to Southern China and Taiwan. This bamboo has sweet edible shoots and is often used in light construction.

## ➤ Summary

Height	14 - 25 m
Diameter	8 - 20 cm
Growth Habit	Dense Clumping
Climate	Tropical - Subtropical
Hardiness	-4°C
Origin	China - Taiwan

## ➤ Culms

*Dendrocalamus latiflorus* has thick walled (5-30 mm) woody culms between 14-25 m tall and 8-20 cm in diameter, which become thinner towards the top. Culm internodes are between 20-70 cm long and have a pale green colour.

➤ **Branches**

Many clustered branches with 1 larger dominant branch. Branches usually start occurring near the middle of the culm.

➤ **Leaves**

Leaf-blades are lance-shaped and between 15-40 cm long and 25-75 mm wide.

➤ **Habitat**

This bamboo species occurs in its native area under humid subtropical conditions, at elevations up to 1,000 m and can tolerate temperatures as low as -4°C. *Dendrocalamus latiflorus* prefers high rainfall and grows best in moist, sandy loam fertile soils. In the tropics it can be cultivated in lowlands as well as in the highlands, but heavy clay, gravel alkaline or acidic soils are not suitable for the production of edible shoots.

➤ **Uses**

Culms used for structural timber (of medium quality) for house and temporary construction, agricultural implements, water pipes, basketry, rafts for fishing, woven wares, furniture, chopsticks, bamboo boards, and paper making. The leaves are used to make hats, to cook rice, to make roofs for boats, and as packing material. Shoots are consumed as a vegetable and are of very good quality.

➤ **Origin**

Origin is not known precisely but probably native in Southern China including Taiwan at 100 - 700 m altitude. *Dendrocalamus latiflorus* is also cultivated in several countries of South-East Asia, such as Burma, Thailand, Vietnam, Japan, The Philippines and Indonesia.



➤ **Photos:**







### ➤ Bamboo Species

*Melocanna baccifera* or "**Muli Bamboo**" is a tropical bamboo native to Bangladesh, Bhutan, India, Myanmar and Nepal. *Melocanna baccifera* is an invasive species that can occupy large areas due to its long and vigorous rhizomes and, in flowering, for its fruits that are easy to germinate. Fruits have the size and shape of a **pear** and are edible. *Melocanna baccifera* is one of the most useful bamboos within its native range, especially in Bangladesh, where stems have a wide range of uses.

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#### Plant Info

<b>Scientific Name</b>	<i>Melocanna baccifera</i>
<b>Synonyms</b>	Melocanna bambusoides, Bambusa baccifera
<b>Common Names</b>	Muli Bamboo, Berry Bamboo
<b>Family</b>	Poaceae
<b>Tribe</b>	Bambuseae
<b>Genus</b>	Melocanna
<b>Height</b>	10-20 m

Plant Info	
<b>Diameter</b>	3-7 cm
<b>Growth Habit</b>	Open Clumper (Invasive)
<b>Colour</b>	Green when young, straw coloured when mature.
<b>Internodes</b>	30-60 cm
<b>Wall thickness</b>	Thin
<b>Branches</b>	Many clustered branches at the nodes.
<b>Leaves</b>	18-42 cm long, 20-90 mm wide.
<b>Climate</b>	Tropical - Subtropical
<b>Exposure</b>	Full Sun - Partial Sun
<b>Hardiness</b>	0°C
<b>Soil</b>	Loam to Sandy Loam - Well drained
<b>Water Needs</b>	Average
<b>Planting Distance</b>	<ul style="list-style-type: none"> <li>• 2 x 2 m for erosion control.</li> <li>• 4 x 4 m for culm production.</li> </ul>
<b>Edibility</b>	(1 of 5)
<b>Flowering Cycle</b>	7-50 years
<b>Origin</b>	Bangladesh, Bhutan, India, Myanmar, Nepal.
<b>Uses</b>	Light construction, woven mats, baskets, handicrafts, household utensils, superior paper pulp, tabashir, erosion control.

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### ➤ Habit

It is tall, small-culmed bamboo with greenish young culms and straw-coloured old culms. It grows in clumps composed of many well-spaced culms. It has a dense appearance due to its branching habit.

### ➤ Description

Culms are greenish when young, but becomes straw-coloured when mature or brownish green when drying. Young culms are covered with stiff, silver hairs. A white bloom occurs just below the nodes. Young shoots are yellowish brown. The culms are straight;

branching occurs from the base, and branches are many, short, loose, and open. Internode length is 25–50 cm, and diameter is 1.5–15 cm. Culm walls are thin. Nodes are prominent.

Culm sheaths are greenish in young plants, and turn brown when mature. The sheath proper is 7–15 cm long and 2.5–15 cm wide. Blade length is 10–30 cm. The auricles are equal. The upper surface of the sheath is covered with white hairs or may not. The lower surface of the sheath is not hairy. Sheaths do not fall off, only blades fall off.





**Photos:**







➤ **Bamboo species: Dolu Bamboo**

- Local/Bangla name: 'Dolu Bash'
- Scientific name: *Schizostachyum dulloa* (Gamble) Majumdar

➤ **Taxonomic Position According to Cronquist (1981)**

<b>Kingdom</b>	Plantae
<b>Division</b>	Magnoliophyta
<b>Class</b>	Liliopsida
<b>Order</b>	Poales
<b>Family</b>	Poaceae
<b>Genus</b>	<i>Schizostachyum</i>
<b>Species</b>	<i>S. dulloa</i>

➤ **Botanical Description of Dolu Bamboo**

- **Habitat:** Available in the northern hilly areas of Sylhet, and in Cachar, Assam.
- **Habit:** It is an evergreen, perennial, bamboo with short rhizomes.
- **Root:** Fibrous root system
- **Stem:** The culms is erect, leaning, or scandent, are 6 – 9 metres long; 25 – 75mm in diameter with thin-walled internodes 40 – 75cm long.
- **Flower:** Monocarpic, has a period of 15 years between flowering.

**Photos:**







➤ **Bamboo Species:**

*Dendrocalamus strictus* also known as **Male Bamboo, Solid Bamboo** or **Calcutta Bamboo** is a tropical and subtropical clumping species native to Southeast Asia. This bamboo is extensively used as a raw material in paper mills and has edible shoots.

➤ **Summary**

<b>Height</b>	8 - 20 m
<b>Diameter</b>	2.5 - 8 cm
<b>Growth Habit</b>	Clumping
<b>Climate</b>	Tropical - Subtropical
<b>Hardiness</b>	-5 °C
<b>Origin</b>	Southeast Asia

➤ **Culms**

*Dendrocalamus strictus* is a medium-sized bamboo with culms of about 8-20 m tall and 2.5-8 cm in diameter. The internodes are 30-45 cm long and thick-walled. Culms are hollow when growing under humid conditions, but nearly solid under dry

conditions. This species has pale blue - green culms when young, and dull green or yellow culms on maturity, which can slightly zig-zag from the middle towards the top. Its nodes are somewhat swollen and basal nodes are often rooting.

➤ **Branches**

Many clustered branches with 1 larger dominant branch. The lower nodes often have branches.

➤ **Leaves**

Leaf size is variable as they are smaller in dry locations and bigger in moist areas, sizes vary between 5-25 cm long and 1-3 cm broad.

➤ **Flowering**

Gregarious flowering cycle varies from 25-45 years. This does not mean that all the clumps of a tract flower at the same time. It commences with intensive sporadic flowering for 2-3 years, increasing progressively resulting in the flowering of all the clumps in a period of five years. Sporadic flowering is seen almost every year. Flowers appear from November to February and fruits are seen from February to April.

➤ **Habitat**

This species is mainly found in semi dry and dry deciduous forests, or as understory in mixed forests and teak plantations. It grows on hill slopes, ravines and alluvial plains from sea level up to 1,200 m. *Dendrocalamus strictus* prefers a low relative humidity and mean annual temperatures between 20°C - 30°C, but can withstand extreme temperatures (as low as -5°C and as high as +45°C). The optimum annual rainfall is 1,000 - 3,000 mm, with 300 mm per month during the growing season, but is very drought resistant and grows rather well with only 750 - 1,000 mm rainfall per year. The species does not grow well on water-logged or heavy soils such as pure clay or a mixture of clay and lime. It rather prefers sandy loam soils with good drainage and a pH between 5.5 - 7.5.

➤ **Uses**

*Dendrocalamus strictus* is extensively used as raw material in paper mills and also for a variety of purposes such as light construction, furniture, musical instruments, bamboo board, mats, sticks, agricultural implements, rafts, baskets, woven wares and household utensils. Young shoots are edible and used as food. Leaves are used as forage, and decoction of leaves and nodes and silicious matter is used in traditional medicine.

➤ **Origin**

Native to India where it occupies 53% of the total bamboo area (especially between the Ganges and Ramganga rivers). It is also native to Nepal, Bangladesh, Myanmar and Thailand. Many other countries in Southeast Asia such as China, Sri Lanka, Malaysia, Indonesia, Philippines and Vietnam have introduced and cultivate the species.



**Photos:**







➤ **Bamboo Species**

*Dendrocalamus longispathus* (Kurz) Kurz

**Habit:**

- **Culms:** caespitose
- **Culm Diameter:** 6 - 10 cm
- **Culm Internode Length:** 25 - 60 cm
- **Wall thickness:** Thick-walled
- **Height:** 10 - 18 meter
- **Identification Features:** Culm Colour greyish green; Culm-sheaths 35-50 cm long and 10-20 cm broad, inner surface glabrous and outer surface clothed densely with patches of stiff dark-brown hair; Leaves 10-30 cm long, Oblong-lanceolate; Inflorescence a large panicle of interruptedly spicate clusters of spikelet's; Caryopsis ovoid, yellow, surmounted by a beak formed by the base of the style.

- **Flowering Cycle:**
  - The flowering cycle of *Dendrocalamus longispathus* can vary from 1–120 years.
  - In gregarious flowering, all plants in a cohort flower over a period of several years.
  - In sporadic flowering, flowering occurs in a single clump or a small group of clumps.
  - The clumps die off after flowering, with or without seed setting.
- **Distribution:** India (Assam, Jharkhand, Meghalaya, Mizoram, Odisha, Tripura, Uttarakhand) Bangladesh, China, Myanmar, Thailand.
- **Spacing for Cultivation:** 5 x 5 meter
- **Uses:** Pulp and paper, Handicrafts, Tooth picks, Landscaping
- **Vernacular names of *Dendrocalamus longispathus***
  - Rupai (Tripura)
- **Synonym of *Dendrocalamus longispathus***
  - *Bambusa longispatha* Kurz
- **Flowering Reported:**
  - Bangladesh (1876, 1879, 1880, 1885, 1930, 1977-79), Myanmar (1862, 1871, 1875, 1887, 1891, 1912, 1913), Kerala (1990)
- **Remarks:**
  - Reported from Assam, Jharkhand, Meghalaya, Mizoram, Orissa, Tripura, Uttarakhand.



➤ **Photos:**







➤ **Bamboo Species**

*Bambusa bambos* also known as **Giant Thorny Bamboo** or **Indian Thorny Bamboo**, is a species of tropical dense clumping bamboo native to Southeast Asia. This bamboo species was previously named *Bambusa arundinacea* and is often used for construction purposes.

**Plant Info**

<b>Scientific Name</b>	<i>Bambusa bambos</i>
<b>Synonyms</b>	Arundo bambos, Bambusa arundinacea
<b>Common Names</b>	Giant Thorny Bamboo, Indian Thorny Bamboo
<b>Family</b>	Poaceae
<b>Tribe</b>	Bambuseae
<b>Genus</b>	Bambusa

Plant Info	
Height	20-30 m
Diameter	10-15 cm
Growth Habit	Dense Clumping
Colour	Dark green when young, bright green when mature.
Internodes	15-46 cm
Wall thickness	25-50 mm
Branches	1-3 branches clustered with 1 larger branch. The branches have very sharp thorns.
Leaves	15-30 cm long, 8-15 mm wide.
Climate	Tropical - Subtropical
Exposure	Full Sun
Hardiness	-1°C
Soil	Loamy and alluvial soils, fertile and well drained.
Water Needs	Average.
Planting Distance	<ul style="list-style-type: none"> <li>• Every 3 m for screening.</li> <li>• 7 x 7 m for culm production.</li> </ul>
Edibility	(3 of 5)
Flowering Cycle	16-52 years



## Plant Info

<b>Origin</b>	Bangladesh, Cambodia, India, Laos, Myanmar, Sri Lanka, Thailand, Vietnam.
<b>Uses</b>	Heavy construction, food, protective fencing, biomass production (>60 t/ha).

### ➤ **Culms:**

The fast growing, strong woody culms of *Bambusa bambos* have an average diameter between 10-18 cm, and are between 20-30 m tall (although the tallest recorded culm measured 40 m). The internodes are dark green coloured with very thick walls. Nodes are slightly swollen and some lower nodes produce short aerial roots.

### ➤ **Branches:**

Nodes contain a central dominant branch with one or two lateral branches and are often spine-like. Thorny lower branches are long and wiry, and usually bent towards the ground. The upper leafy branches produce a fan like plume and bearing small spines.

### ➤ **Leaves:**

Leaves are lance-shaped with a long-pointed tip. They measure between 15-30 cm long and 8-15 mm broad, with about 10 leaves in each complement.

### ➤ **Seeds:**

This bamboo species may flower every 16-52 years. Gregarious flowering was last reported in the early 90's (1991-1995) where single clumps gave about 50-100 kg of seeds (70,000 to 85,000 seeds per kilogram). *Bambusa bambos* seeds are generally viable for a period of 6-8 months.

### ➤ **Habitat:**

*Bambusa bambos* prefers a humid tropical climate and grows best along river banks or river valleys with a rich, moist soil. It reaches its best development in moist deciduous forests up to an altitude of 1,250 m and receiving nearly 2,000-2,500 mm rainfall a year.

In flat alluvial soil, the culms are reported to attain a height of 25-30 m and a diameter of 20-25 cm.

➤ **Uses:**

Culms are used for house construction, scaffolding, rafters, thatching and roofing, handicrafts and art objects, basket making, bows and arrows, furniture, floating timber and rafting, cooking utensils and fencing. The raw material of this bamboo is also an important source for paper pulp and panel products. Shoots and seeds are edible and leaves are used as fodder and medicine.

➤ **Mechanical properties:**

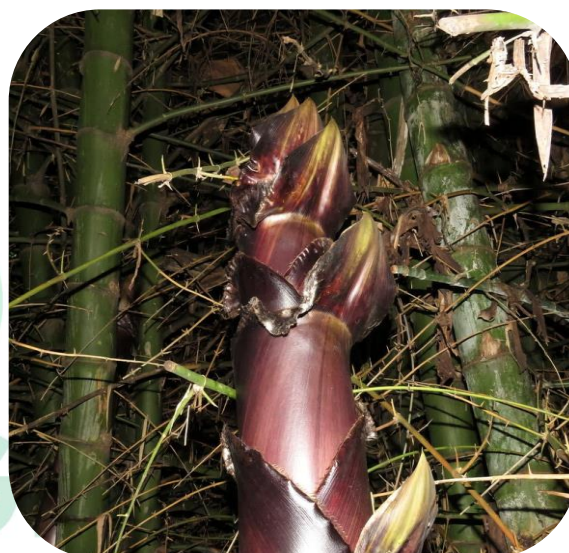
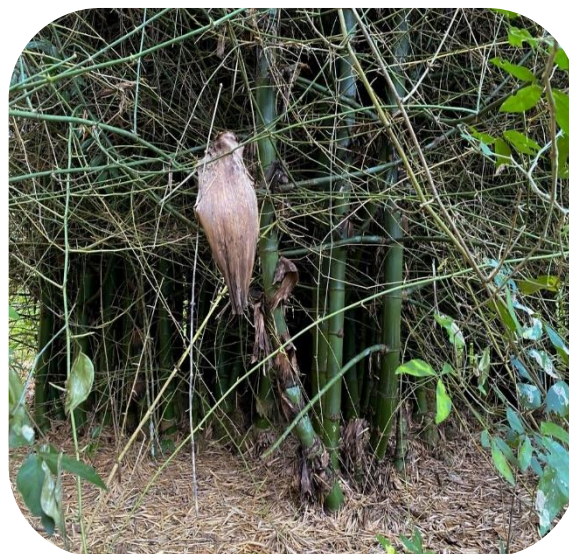
Fibre stress varies between 18.3-26.5 N/mm<sup>2</sup>, modulus of rupture is 35-39.3 N/mm<sup>2</sup>, modulus of elasticity 1.5-4.4 kN/mm<sup>2</sup> and maximum crushing stress is 39.1-47 N/mm<sup>2</sup>.

➤ **Origin:**

- *Bambusa bambos* is native to Southeast Asia, to be more specific: India, Pakistan, Sri Lanka, Bangladesh, Burma, Thailand, Laos, Kampuchea, Vietnam and China.
- In India this species occupies 15% of all bamboo forests. It was also introduced to many other tropical countries and regions; including New Guinea and Pacific Islands, northern Australia and New Zealand, tropical Africa and Madagascar, Central and South America (including Caribbean Islands), Mexico and Southern USA (Florida).



**Photos:**







- **Bamboo Species:** *Dendrocalamus sikkimensis*

**Habit:**

- **Culms:** Caespitose
- **Culm Diameter:** 12 - 20 cm
- **Culm Internode Length:** 30 - 45 cm
- **Wall thickness:** Thick-walled
- **Height:** 17 - 20 meter
- **Identification Features:** Culm Colour-Dark green; Culm-sheaths 30 cm long, pubescent with dark brown hairs, auriculate; Leaves: 15-25 cm long 2.5-5 cm broad, lanceolate; Inflorescence a panicle with stiff nodose branches bearing large red-brown globose heads; Fruit Caryopsis with adherent pericarp, obovoid.
- **Flowering Cycle:**
  - Many bamboos species flower after very long intervals, such as 65 or 120 years.



- These species exhibit mass flowering, or gregarious flowering, where all plants in a cohort flower over several years.
  - In the year following flowering, or years in the case of gregarious flowering, blooms tend to be concentrated in the months between November and April.
  - Seeds are generally available from March to April onwards.
- **Distribution:** India (Assam, Arunachal Pradesh, Meghalaya, Nagaland, Sikkim, West Bengal), Bhutan, China, Nepal
- **Altitude:** 2100 meter
- **Spacing for Cultivation:** 7 x 7 meter
- **Uses:** Fencing, Posts, Huts, Ropes, Boxes, Water pipes, Pulp and paper, Handicrafts, Animal fodder
- **Vernacular names of *Dendrocalamus sikkimensis*:** Wadah (Garos), Pugriang (Lepcha), Rawami, Sangau (Mizoram), Bhalu-bans (Nepal)
- **Flowering Reported:** Mizoram (1977-79), Kalimpong Forest Division (1916, 1930, 1982)
- **Remarks:** Reported from Assam, Arunachal Pradesh, Meghalaya, Nagaland, Sikkim, West Bengal., 123 kg seeds are obtained from one clump.

➤ **Photos:**







- **Bamboo Species:** *Bambusa pallida* Munro

*Dendrocalamus criticus* Kurz , *Arundarbor pallida* (Munro) Kuntze

- **Common Name:**

Bijuli, Bakhal, Burwal, Bijli, Jowa (Assam); Makal (Tripura), Bijli (Arunachal Pradesh), Pashipo, Pushee (Lapcha-Sikkim), Tenang (Meghalaya), Tesero, Watoi (Nagaland).

rooted in nature, growing for the future

#### **Habit:**

- **Culms: Tufted Height:** 13-20m
- **Diameter:** 5-8cm
- **Culm Colour:** Olive green
- **Internode Length:** 45 - 70cm
- **Culm Sheath Colour:**

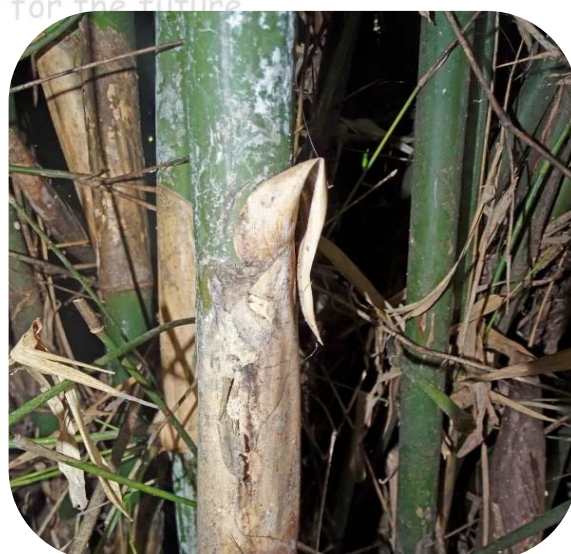
18-30cm long and 25cm broad, slightly attenuate upwards and truncate at top. Young blade 35cm long, triangular acuminate from a broad base covered with appressed white hairs; abaxial surface appressed black hairy, adaxial surface glabrous or sparsely hairy.

Culm-sheaths fall off from bottom of the culms upwards within 15 days, before falling become straw-coloured, blades at first greenish, changing to straw colour within few days.

- **Length of Leaf:** 10- 20cm
- **Breadth of Leaf:** 1- 2 cm
- **Leaf Shape:** Linear lanceolate
- **Habitat:** Moist evergreen forest
- **Altitude:** 700 -2000m
- **Soil:** Sandy to clay loam soil
- **Native to:**  
India, Burma, Thailand
- **Introduced to:**  
Assam, Meghalaya, Mizoram, Nagaland, Tripura, Himachal, West Bengal, Orissa, Utter Pradesh, Kerala, Karnataka
- **Description of Inflorescence and Flower:**  
large branching panicle, with spicate branchlets bearing heads with many sterile and few fertile spikelet's; rachis fistular, that of branchlets slender, wiry, glabrous. Spikelet's pale, 2.5-3 cm long, sometimes curved, bearing usually 1-2 small ovate-acute empty glumes, 1 male or gemmiparous glume, 3-8 fertile flowers, 3-5 imperfect ones gradually decreasing in size; rachilla short, club-shaped, ciliate at top; flowering glum ovate-acute, mucronate, many- nerved, glabrous, minutely pubescent within; palea much short, acute, 2-keeled, shortly ciliate on the keels, 3-5 veins between them; lodicules 3, oblong or narrowly obovate, two rather unequally sided, large, and the third acute, smaller, all somewhat thickened at base and veined. Stamens hardly exerted, anthers narrow, apiculate, with 1 or 2 long hairs or not. Ovary narrowly oblong, attenuate upwards into a hairy thickened style which soon branches into 3 plumose stigmas.
- **Flowering Reported:** Bangladesh (1850), Assam (1890)
- **Propagation:** Culm cuttings
- **Uses:** Baskets, construction, plates, screens, toys, wall hangers.



**Photos:**







➤ **Bamboo Species:** *Thyrsostachys oliveri*

➤ **Vernacular names of *Thyrsostachys oliveri*:**

Burma Bamboo (English); Lathi Mula (Kerala); Kanak-kaich (Tripura); Phunkirua (Mizo); Goping (Kuki); Burma-wa (Manipuri)

#### **Habit**

➤ **Culms:** Caespitose

➤ **Culm Diameter:** 5 - 7 cm

➤ **Culm Internode Length:** 40 - 60 cm

➤ **Wall thickness:** Thin-walled

➤ **Height:** 15 - 25 meter

➤ **Identification Features:**

Culm bright green with whitish silky surface when young, dull green or yellowish on maturity, internodes terete; Culm-sheaths persistent, chartaceous, pubescent, hairy



throughout, with white hairs, without auricles; Leaves deciduous, lanceolate, 17-20 cm long, 1.2-1.8 cm wide; Inflorescence a large compound curved, thyrsoid panicle; Caryopsis with adherent pericarp.

- **Flowering Cycle:** 48 - 50 years.
- **Flowering Reported:** Myanmar (1891), Dehra Dun (1938, 1986, 1987), Haldwani, U.P (1962-63).
- **Distribution:** India (Arunachal Pradesh, Manipur, Mizoram, Tripura, Uttarakhand, West Bengal), China, Myanmar.
- **Spacing for Cultivation:** 5 x 5 meter
- **Uses:** Construction, Handicrafts, Edible shoots, Canning, Fishing Rod, Poles.



**Photos:**

