

Major Timber yielding plants of J&K state – Morphology, Botanical Name and Family

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Introduction

Timber traces back to an Old English word initially meaning “house” or “building” that also came to mean “building material,” “**wood**,” and “**trees**” or “**woods**.” Timber, the wood of commercial importance is one of the most valuable and versatile raw material used by man. It plays an important role in the economic and industrial development of a nation. Discovery of metals and synthetics has considerably reduced the consumption of wood but we are yet to have a proper substitute for wood. Wood is cheaper, light in weight and can be modified easily with various tools. It is tough, elastic, and a poor conductor of heat, electricity, and moisture. These properties increase its utility in various industries. Besides this, wood is also an important source of many other useful products.

Forests are one of the most striking features of the land surface and wood is the most important product obtained from forests for the welfare of the human beings.

Ut Jammu and Kashmir is bestowed with a topographical, geographical and environmental/climatic diversity which resulted in a remarkable diversity of the habitats like mountains, plains and valley areas of Jammu that in turn lead to a great deal of the floral and faunal diversity.

Forests are one of the most important resources of Jammu and Kashmir. Spread over 2,236 sq. kms. of the demarcated area forests account for 20% of the total geographical area on this side of the Line of Control. More than 99% of forest area is confined to Jammu & Kashmir only, with the largest area of 5848 sq. kms. in the district of Doda and the smallest are of 481 sq. kms. in the district of Budgam. Over 19,236 sq. kms. is under coniferous softwood (**Pine**) and 946 sq. kms. under non-coniferous softwood. In the coniferous category, Fir accounts for 3355 sq. kms., Kail for 1874 sq. kms., Chir for 1773 sq. kms. and Deodar for 1122 sq. kms. Forests require abundance of moisture in the soil. So they are found in the areas where there is sufficient rainfall or along the banks of the rivers where sufficient water is available. In Jammu and Kashmir forests are mainly found where annual rainfall is about 100 cms. However, scrub forests are found, where rainfall is even less than 100 cms.

The valley of Kashmir has deciduous vegetation. The Chinar, Poplar, Deodar, Fir, Pine, Kail, Partal, Mulberry, Walnut and other fruit trees grow throughout the valley. Baramulla and Anantnag districts have respectively 71% and 60% of their areas under forests.

Big forests in the valley provide timber and fire-wood. Grassy meadows in the forest provide fodder for the cattle. Medicinal herbs such as **balladonia, hyoseyamus, digitalis, menthol, artemisia, polygala, podophyllum, rubus, trillium, hops and kuth** grow in these forests. Industries like paper, joinery sports goods, furniture, wood carving, herbal drugs, silk industry, Match industries, manufacture of agricultural implements and construction of railway sleepers depend on these forests. At Pampore (Kashmir) and Bari Brahmana (Jammu) plywood, hard-board and chip board manufacturing factories have been established by the State Government in collaboration with a firm from Calcutta. Three large Truck and Bus Body Building factories for the

manufacture of truck and bus bodies are established in Jammu and Srinagar. Pulp required for the manufacture of Hand-made paper strawboard and cardboard. is also obtained from the forests

Quality of Wood

Quality of wood depends on the secondary tissue formed during the secondary growth of the trees. It depends upon the size, distribution pattern of the tracheids, vessels, fibre and growth rings in the secondary wood formed. There are certain terms used to designate quality of wood i.e Hardwood-softwood, heartwood –sap wood, Porous nonporous wood. These properties of wood are further categorised as

1. Physical Properties:

- a) Mechanical: Strength, Stiffness and flexibility, Toughness, Hardness, Cleavability
- b) Non –Mechanical: Moisture content, Density, Durability, Surface characteristics like Lustre, Odour, Colour, Texture, Grain, Polish

2. Chemical properties: Presence of tannins, oil, gum, resin, and alkaloids.

This in turn affects the use of a wood as timber. Some of the characteristics of wood are discussed.

Characteristics of Good Timber

1. Durability

- 2. Durability is the first priority for any kind of timber material. A good timber should be durable enough to resist the actions of wood rotting fungi, insects, termites, chemical agents , physical agencies, etc. However, wood is weak against the actions of strong acids and alkalis but it can withstand weak acids and alkali solution.

2. Strength

Strength is the resistance against failure. A good timber should not fail easily and it should be strong enough to take loads acting on it. The strength of timber varies depending on the direction (transverse or direct) it is loaded. Strength is considered as an important property while designing structural wood members such as wooden beams, joints, rafters, etc.



structure built

3. Permeability

The permeability of timber should be less. A good timber should not absorb more than 8 to 12% of water by its weight when placed in water. The water permeability of timber depends upon various factors such as moisture content of timber, age of timber, type of timber, type of cut, etc.



4. Hardness

Hardness is the resistance against penetration. Good timber should be hard and workable. The hardness of timber depends upon its density and heartwood properties. Stronger is the heartwood higher is the hardness of timber.



5. Toughness

Toughness is the resistance against sudden shocks and vibrations. A good timber should be tough enough to resist sudden impact loads and vibrations. The toughness of timber is improved by the good interlocking of grains in its structure. A good tough timber is used to make handles of different tools, parts of automobiles, etc.



6. Elasticity

A good timber should be elastic. Elasticity is the property of regaining its original shape after deformation causing loads are removed. A good elastic timber is used to make sports items, shafts, bows, etc.



7. Workability

Workability of timber is the ease with which it can cut into the required shape. A good timber is easily workable. It should not damage or block the teeth of the saw during cutting.



8. Weight

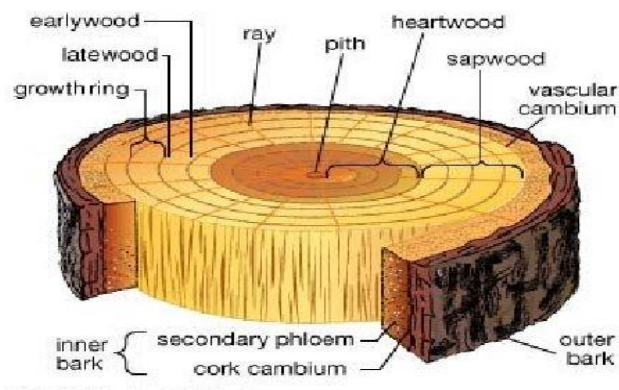
The timber should be heavy as much as it looks. A timber is said to be good if it weighs heavy. Lightweight timbers are less in strength and unsound.



9. Structure

A timber with uniform structure is said to be a good timber. The fibers of timber should be straight and firm. The annual rings of timber should be closely located indicating the fact that

the tree is mature enough to use it for making timber products. The medullary rays should be hard and compact. In general, an age of 50 to 100 years is considered a good age for felling of trees.



Structure of Timber

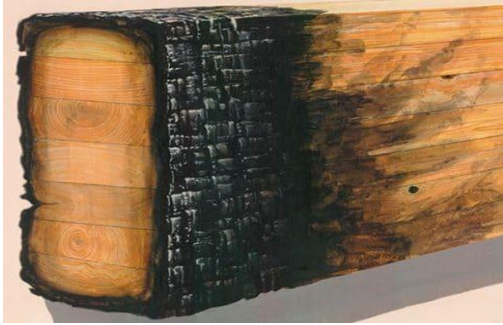
10. Defects

A timber is said to be good when it is free from defects caused by natural forces such as burls, knots, shakes, etc. and also it should be free from various fungal defects such as blue stain, dry rot, wet rot. etc.



11. Fire resistance

Fire-resistance of timber is very low. Of all the timber types, dense wood offers the most resistance against fire but up to certain limit only. The thermal conductivity of timber depends upon various factors such as moisture content, density, porosity, etc.



12. Mechanical Wear

Wooden floors, pavements, etc. made of timber are continuously subjected to traffic loads. Hence, good timber should not deteriorate easily against mechanical wear or abrasion.



Wood Flooring

13. Appearance

The appearance of a good timber should be shiny when it is freshly sawed. This shining appearance is due to resinous matter present in the timber. The appearance of timber depends upon the arrangement of cells in its structure. If they are arranged in a uniform manner, the uniform appearance will be obtained after cutting. Fungal defects such as blue stain, sap stain, etc. damage the appearance of timber.

14. Color

The strength of timber can be estimated by looking at its color. Light color designates low strength timber while dark color indicates high strength timber. Hence, dark-colored timber is preferable for mechanical works.



Color of Timber

15. Shape

The shape of timber should not be disturbed while cutting and seasoning. A bad timber may bow or warp or split during conversion.



Warped Wood

16. Smell

The smell of a good timber is sweet. Bad or unpleasant smell indicates decayed timber.

17. Sound

The velocity of sound in timber (hardwood) is approximately 12 times more than that in the air. Hence, a good timber should produce clear ringing sound when struck. This is the reason why many musical instruments are made of wood. A dull heavy sound designates decayed timber.



Major Timber yielding plants of J&K state – Morphology, Botanical Name and Family

.Botanical name : Cedrus deodara

Family: Pinaceae (Pine family)

Common name: Devdar, Himalayan Cedar, **Deodar cedar** •

Morphology:

It is a large [evergreen coniferous tree](#) reaching 40–50 m (131–164 ft) tall, exceptionally 60 m (197 ft) with a trunk up to 3 m (10 ft) in diameter. It has a conic crown with level branches and drooping branchlets.^[2]The [leaves](#) are needle-like, mostly 2.5–5 cm (0.98–1.97 in) long, occasionally up to 7 cm (2.8 in) long, slender (1 mm (0.039 in) thick), borne singly on long [shoots](#), and in dense clusters of 20–30 on short shoots; they vary from bright green to [glaucous](#) blue-green in colour. The female [cones](#) are barrel-shaped, 7–13 cm (2.8–5.1 in) long and 5–9 cm (2.0–3.5 in) broad, and disintegrate when mature (in 12 months) to release the winged [seeds](#). The male cones are 4–6 cm (1.6–2.4 in) long, and shed their [pollen](#) in autumn.^[2]

Disribution in JK : It start appearing in temperate area of the UT i.e from Kudh onward and grows chiefly in the north-western Himalayas of Kashmir

Utilisation: Deodar wood is one of the strongest woods in India. The heartwood is fine and close grained, aromatic, rot and termite resistant and durable. It is used for construction and building, boat houses, doors, furniture, wooden carvings.



Cedrus deodara

Botanical name: Dalbergia sissoo Roxb.

Family: Fabaceae

Common name: Indian Rosewood, Indian Dalbergia, ,vern. Tahli

Morphology

A middle-sized deciduous tree present in the plains and subtropical regions of Jammu. It reproduces by seeds and [suckers](#).^[2] It can grow up to a maximum of 25 m (82 ft) in height and 2 to 3 m (6 ft 7 in to 9 ft 10 in) in diameter, but is usually smaller. Trunks are often crooked when grown in the open. Leaves are leathery, alternate, pinnately compound and about 15 cm (5.9 in) long. Flowers are whitish to pink, fragrant, nearly sessile, up to 1.5 cm (0.59 in) long and in dense clusters 5–10 cm (2.0–3.9 in) in length. Pods are oblong, flat, thin, strap-like 4–8 cm (1.6–3.1 in) long, 1 cm (0.39 in) wide and light brown. They contain 1–5 flat bean-shaped seeds 8–10 mm (0.31–0.39 in) long. They have a long taproot and numerous surface roots which produce suckers. Young shoots are downy and drooping; established stems with light brown to dark gray bark to 2.5 cm (0.98 in) thick, shed in narrow strips; large upper branches support a spreading crown.

Distribution: In subtropical, plain areas of Jammu region

Utilisation

The heartwood is brown, mottled with dark longitudinal veins, hard and close-grained. It is highly esteemed for all purposes where strength and durability are required. It is used for making furniture, construction and agricultural implements.



Dalbergia sissoo

Botanical name: *Juglans regia* Linn.

Family: Juglandaceae

Common name: Walnut; Hindi Akhrot ; Vern. Khoad

Morphology

Juglans regia is a large, aromatic, deciduous tree with velvety shoots and grey bark which is longitudinally fissured, attaining heights of 25–35 m (80 to 120 ft), and a trunk up to 2 m (6 ft) diameter, commonly with a short trunk and broad crown, though taller and narrower in dense forest competition. It is a light-demanding species, requiring full sun to grow well.

Distribution: In the temperate region of the state i.e Kashmir valley, Baderwah and Kishatwar and other higher ranges of N-W Himalayas.

Utilisation

The wood is grayish-brown with dark streaks, often mottled and moderately hard. It is in great demand for making furniture, cabinet making and wood carvings in Kashmir. The carved goods are exported to foreign countries also.



Juglans regia

Botanical name: *Pinus roxburghii* Sargent.

Family: Pinaceae

Common name: Long leaved Pine; Vern. Cheer

Morphology

Pinus is a large, perennial, evergreen plant. Branches grow spirally and thus the plant gives the appearance of a conical or pyramidal structure. Plant body is differentiated into roots, stem and acicular (needle-like) leaves with tap root. The stem is cylindrical and erect, and remains covered with bark. Branching is monopodial. Two types of branches are present: long shoots and dwarf shoots. Long shoots contain apical bud and grow indefinitely. Many scaly leaves are present on the long shoot. Dwarf shoots are devoid of any apical bud and are of limited growth. They arise on the long shoot in the axil of scaly leaves. A dwarf shoot has two scaly leaves called prophylls, followed by 5-13 cataphylls arranged in 2/5 phyllotaxy, and 1-5 needles. The leaves are of two types, i.e., foliage and scaly. Scaly leaves are thin, brown-coloured and scale like and develop only on long as well as dwarf shoots. Foliage leaves are present at the apex of the dwarf shoots only.

On the basis of Number of foliage leaves we have different sp of Pinus as under:

(i) Pinus monophylla-unifoliar (having only one needle); (ii) P. sylvestris-bifoliar (having two needles); (iii) P. gerardiana-trifoliar (having three needles); (iv) P. quadrifolia-quadrifoliar (having four needles); (v) P. wallichiana-pentafoliar (having five needles). The plants are monoecious. The male cones appearing on lower branches and female cones on the higher branches. Seeds are about 0.8 cm long with a thin membranous wing longer than the seed. Here in this note I am giving you photographs of two species only.



Pinus roxburghii

Botanical name: *Pinus wallichiana* A.B.Jackson.:

Family: - Pinaceae

Common name: Himalayan Blue Pine;• Hindi Kail ;Vern. Kail

Morphology

A tall pyramidal tree with smooth, slate-grey bark which becomes rough and shallow fissured on maturity . morphology already discussed.



Pinus wallichiana

Distribution: It is found in the North-western Himalayas at a height ranging from 405-2290m. In Jammu it starts appearing from Nandani onward, also appears in the foothills of the Shivaliks.

Utilisation: A large tree with a clear straight bole and bark about 2 in. thick, outer corky and in thin crisp plates, inner brick-red. The wood is largely used for construction and other purposes where durability is not required. The wood is highly resinous and used for local construction.

Botanical name: *Taxus wallichiana* Pilger

Family: Taxaceae

Common name : Himalayan Yew; Vern. Brhammi

A medium size conifer in high altitude regions and getting rare in the habitat. They are relatively slow-growing and can be very long-lived, and reach heights of 2.5–20 metres (8.2–65.6 ft), with

trunk girth averaging 5 metres (16 ft).^[1] They have reddish [bark](#), lanceolate, flat, dark-green [leaves](#) 10–40 millimetres ($\frac{1}{2}$ –1 $\frac{1}{2}$ in) long and 2–3 mm ($\frac{3}{32}$ – $\frac{1}{8}$ inch) broad, arranged spirally on the stem, but with the leaf bases twisted to align the leaves in two flat rows either side of the stem.^[2] **The oldest known fossil species are from the Early Cretaceous.**^[3] The [seed cones](#) are highly modified, each cone containing a single [seed](#) 4–7 mm ($\frac{5}{32}$ – $\frac{9}{32}$ inch) long partly surrounded by a modified scale which develops into a soft, bright red [berry](#)-like structure called an [aril](#), 8–15 mm ($\frac{5}{16}$ – $\frac{19}{32}$ inch) long and wide and open at the end. The arils are mature 6–9 months after pollination, and with the seed contained are eaten by [thrushes](#), [waxwings](#) and other [birds](#), which disperse the hard seeds undamaged in their droppings; maturation of the arils is spread over 2–3 months, increasing the chances of successful seed dispersal. The male cones are globose, 3–6 mm ($\frac{1}{8}$ – $\frac{1}{4}$ inch) across, and shed their [pollen](#) in early spring. Yews are mostly [dioecious](#), but occasional individuals can be variably [monoecious](#), or change sex with time.^[2]

Distribution: It grows well in the shady and cool places of the UT of JK. Especially in the Kashmir valley and other temperate region .

Utilisation : The wood is used for house building



Taxus wallchiana

Botanical name: Mangifera indica L.

Common name : Mango, Vern. Amb

Family: Anacardiaceae

Morphology

Tree is medium to large (10-40 m in height), evergreen with symmetrical, rounded canopy ranging from low and dense to upright and open. Bark is usually dark grey-brown to black, rather smooth, superficially cracked or inconspicuously fissured. Terminal bud small, enveloped by small, lanceolate acute bud scales. Twigs not very thick, smooth, apically angular, glabrous, glossy and dark green. With a long unbranched tap root with well developed root system. The leaves are simple, exstipulate, alternately arranged, 15-45 cm in length. The petiole varies in length from 1 to 12 cm, always swollen at the base. It is grooved on the upper side. The phyllotaxy is usually 3/8 but as the leaves are arranged very closely at the tips they appear to be whorled. Leaves are variable in shapes like oval-lanceolate, lanceolate, oblong, linear-oblong, ovate, obovate-lanceolate or roundish-oblong. The apex ranges from acuminate to nearly rounded. The margin is usually entire, sometimes slightly undulated and wavy, rarely twisted or folded. The length and breadth varies from 12 to 45 cm and 2 to 12 cm, respectively, depending on variety and growth. The secondary veins are quite prominent, and in some of the varieties range from eighteen to thirty pairs. The upper surface is shining and dark green while the lower is glabrous light green. The leaves appear in flushes. They are flaccid and pendulous when young. The colour of young leaves generally vary from variety to variety, generally being tan-red, pink, yellow-brown in colour. As the leaf grows, its colour changes from tan-red to green, passing through many different shades and become dark green at maturity. They strongly smell of turpentine (some cultivars do not smell). The leaves contain a good amount of mangiferin (xanthone). In India, it was obtained as "Indian Yellow" from the cow's urine. The panicle bear 500-6000 flowers of which 1-70% are bisexual, remainder are male depending on the cultivar and temperature during its development. The mango fruit is an irregularly egg-shaped and slightly compressed large fleshy drupes. It varies in size, shape, color, presence of fiber, flavor, taste and several other characters depending on variety. The fruits grow at the end of a long, string-like stem (the former panicle), with sometimes two or more fruits to a stem. The fruit ranges from 6.25-25 cm in length and from a few grams to 1.8-2.26 kg.

Distribution: In the subtropical, hot areas of the UT of JK., Jammu, Kathua, Udhampur, Basolli etc

Utilisation: A large evergreen tree with rough thick dark-grey bark. The wood grey, coarse-grained soft and liable to attacks of insects. It is made into planks and other articles where durability is not required.



Mangifera indica

Botanical name: . *Platanus orientalis* L.

Family: Platanaceae

Common name: Oriental Plane, Vern. Chinar

Morphology

Chinar is a very large, deciduous, widespreading, and long-lived deciduous tree. Its leaves are borne alternately on the stem, deeply 3, 5 or 7 lobed, and palmate or maple-like, with coarsely toothed margins. It usually has flaking bark, occasionally not flaking and becoming thick and rugged. Flowers and fruit are round and similar to those of [Kadam](#), borne in clusters of between 2 and 6 on a stem.

Distribution

From earliest days, Chinar has been an important tree in Persian gardens, which are built around water and shade. In Kashmir valley, a tiny island in the Dal lake in Srinagar, is called Char-Chinar because of the four Chinar trees there. Chinar tree is an integral part of Kashmiri culture. Almost every village in the valley has a Chinar tree.

Utilisation: The wood is used for construction, plywood and board, cabinet making, furniture and general turnery. The timber, often called lacewood, is figured and valuable for indoor furniture.



Botanical name: . *Salix heterophylla* Hort. Ex Lavalley, and *S. alba*

Family: - Salicaceae

Common name: Badhaa

Morphology

Feltleaf willow is a deciduous, semievergreen tree or shrub 2 to 33 feet (0.5-10 m) tall . It typically grows in clumps of 5 to 20 stems . Branches are typically erect, but in exposed High Arctic and alpine sites feltleaf willow may have a prostrate or semiprostrate form . Trunks may be 4 to 7 inches (10-18 cm) in diameter . Heavy browsing commonly hedges feltleaf willows.

Leaves are deciduous, alternate, and simple coracious and lenear laceolate, petiolated and stipulated. They are 2.0 to 4.3 inches (5-11 cm) long and 0.4 to 1.6 inches (1-4 cm) wide. Willow roots are typically shallow . Feltleaf willow sometimes forms [adventitious](#) roots . All the [buds](#) are lateral; no absolutely terminal bud is ever formed. The buds are covered by a single scale. Usually, the bud scale is fused into a cap-like shapeThey are dioecious .The inflorescence is a catkin. Male catkins are 1.2 to 2.0 inches (3-5 cm) long, and female catkins are 2.0 to 5.9 (5-15 cm) long . The fruit is a capsule, which splits open to release the seeds. A tuft of hairs plumes each seed .

Distribution :Kashmir Vally

Utilisation

The wood is white, soft, close-grained and used for furniture making. *S.alba* *S. purpurea*, *S. viminalis*, *S. triandra* and *S. dephionoids* are now found in many places across the vallywood is used in Basketry and furniture industry ,Packing case industry : Cricket bat industry where bats of international standard are made



Salix heterophylla

Salix alba



Articles made from wood of Salix alba

Botanical name: . *Eucalyptus tereticornis* Sm.

Family: - Myrtaceae

Common name: Eucalyptus; Vern. Safeda

Morphology

Eucalyptus tereticornis is a tree that typically grows to a height of 20–50 m (66–164 ft) and forms a [lignotuber](#). The trunk is straight, usually unbranched for more than half of the total height of the tree and has a girth of up to 2 m (6 ft 7 in) [dbh](#). Thereafter, limbs are unusually steeply inclined for a *Eucalyptus* species. The bark is shed in irregular sheets, resulting in a smooth trunk surface coloured in patches of white, grey and blue, corresponding to areas that shed their bark at different times. Young plants and [coppice](#) regrowth have dull bluish green, egg-shaped leaves that are 60–130 mm (2.4–5.1 in) long and 30–80 mm (1.2–3.1 in) wide. Adult leaves are the same shade of green on both sides, lance-shaped to curved, 80–220 mm (3.1–8.7 in) long and 10–35 mm (0.39–1.38 in) wide, tapering at the base to a [petiole](#) 13–30 mm (0.51–1.18 in) long. The flower buds are arranged in leaf [axils](#) in groups of seven, nine or eleven on an unbranched [peduncle](#) 7–25 mm (0.28–0.98 in) long, the individual buds on [pedicels](#) 2–6 mm (0.079–0.236 in) long. Mature buds are an elongated oval shape, 9–16 mm (0.35–0.63 in) long and 3–6 mm (0.12–0.24 in) wide with a conical to horn-shaped [operculum](#) that is much longer than the [floral cup](#). Flowering has been recorded in most months and the flowers are white. The fruit is a woody, hemispherical [capsule](#) 2–6 mm (0.079–0.236 in) long and 4–8 mm (0.16–0.31 in) wide with the valves prominently protruding

Distribution: Planted almost everywhere by Government.

Utilisation: An introduced tall tree with thin grey bark. The wood is light brown, soft, close-grained and used for construction, furniture, planks, poles, agricultural implements.



Eucalyptus tereticornis Sm.

Note:

These are some of the major timber plants of JK ,otherwise There are many more such commercially important tree species occurring in the UT of Jammu and Kashmir.