OAKS IN PAKISTAN - A REVIEW

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KEY CHARACTERS

Australia and other part of the world. In Pakistan six species namely Q. baloot, Q. dilatata, Q. glauca, Q. incana, Q. rubra and Q. semecarpifolia occur wild in nature in moist and dry temperate forests (Champion et al. 1965). Among these species Q. rubra is planted and has been naturalized, however, it is not common (Stewart, 1972 and Yasin, 1976).

The Oaks are monocious, evergreen or deciduous trees, rarely shrubs. Leaves are alternate, usually toothed or lobed, stipulate. Male flowers in pendulous catkins, solitary or in clusters, bracts small, perianth campanulate or cupular, 3-6 lobed or parted; stamens usually 6 pistilloide sometimes present, usually 0; female flowers with an involucre of small scales, solitary or in clusters of 3 or more. Stigmas fleshy, ovary 3-5 locular, styles usually 3 or as many as the loculi. Fruit (acorn) is partially enclosed in a cupule formed by the acrescent and hardened involucral scales; seed frequently solitary, rarely more. The size of fruit varies considerably on the same tree.

The Oaks (Quercus spp.) are the members of family Fagaceae. There are over 400 species which are distributed in America, temperate Europe, Asia, sub-tropical Africa, etc. Each species is given below:

INTRODUCTION

The Oaks are extremely slow growing, crooked trees, once occurred over large area in Pakistan but have been universally destroyed, by felling and lopping, to provide timber and fuelwood and to create cultivated land and whatever remains today occurs as a low scrub and only provides fuel and forage. Oak species are important both economically and silviculturally; provide a watershed, cover over the steep mountainous slopes and a habitat for big game, black mush room, some medicinal plants and as a nurse to conifers seedlings with which these are frequently associated. Dry oak forests were found to indicate Mediterranean climate as elsewhere in the world, however, they comprise of two sub-types in Pakistan: pure dry oak forests with true Mediterranean climate and the dry oak-chir ecotonal forest with transitional Mediterranean climate (Beg and Khan, 1980).

reviewed the literature and set a key for identification. In addition to this, brief description, distribution, ecology and uses of each species is given below:

**KEY CHARACTERS**

1. + Leaves pinnatifid or partite, auricled at the base.  
   - Leaves entire or spiny-toothed, not auricled at the base.  
   - *Q. rubra*  
   1.  
   2. + Bracts 3-4 mm long. Styles sub-capitate. The accrescent scales of the cupule in annular rings.  
   - Bracts less than 2.5 mm long. Styles linear or clevate. The cupule of imbricate scales.  
   - *Q. glauca*  
   2.  
   3. + Lower leaf surface rusty-tomentose, Acorn sub globose, the cupule covering only of its base.  
   - Lower leaf surface whitish-tomentose to glabrescent and pale green. Acorn ovoid or oblong, the cupule covering 1/3 to 2/3 of it.  
   - *Q. semecarpifolia*  
   3.  
   4. + Leaves always coarsely toothed. Upper leaf surfaces dark green and spiny, lower white-tomentose.  
   - Leaves entire or spiny-toothed, upper surface green, lower pale to whitish-tomentose, becoming glabrescent.  
   - *Q. incana*  
   4.  
   5. + Small tree or shrub. Young shoots and under surfaces of leaves stellate pubescent. Anthers hairy. Acorn more or less cylindric.  
   - A medium to large sized tree. Young shoots and under surfaces of leaves glabrescent. Anthers glabrous. Acorn more or less ovoid.  
   - *Q. dilatata*  
   5.

**Distribution**

It is native of India, Pakistan and Afghanistan, distributed from Syria westward to Atlantic. In Pakistan it is found in the Himalayas and Hindukush mountains specially Kurram, Dir, Chitral, Swat, Nanga Parbat, Tirah etc (Parker,1918; Stewart, 1972 and Yasin,1976).

**Ecology**

Tree grows on dry, stony and arid soils. It requires a precipitation of 200 to 1000 mm/year or more. It prefers a sub-humid, semi-arid temperate mediterranean climate with a temperature range of -20 to 35°C at an elevation between 1500 and 3000 m. It coppices well and is attacked by powdery mildew and leafy mistletoe. The tree is well suited for planting in watershed areas to help erosion control.

**Uses**

The bark is used for tanning purposes. The stored leaves when shed the spines are used as winter fodder. The heartwood is red or reddish-brown and very durable having specific gravity 0.94. It is well polished and largely used for tool handling agricultural implements. It yields good fuelwood and charcoal (Calorific value 5100 Kcal/Kg) (Sheikh,1992). The branches are used for fencing purposes.

**Description**

A small medium sized (2-12m tall), monoecious, gregarious, evergreen tree. It flowers between April and May and fruiting period is 12 to 18 months after pollination.

**Name:** *Quercus baloot* Griff.
**Syn.:** *Quercus ilex* Auch.
**Eng. name:** Holm Oak
**Vern.:** Brech

**Description**

A large (24-30 m tall), monoecious, gregarious, evergreen tree. It flowers between April and May and fruits between May to October, a year after pollination.
Distribution

The tree is native to India, Pakistan, Afghanistan and Nepal. In Pakistan, it is found in the Himalayas specially in Dir, Chitral, Swat, Hazara, Tirah, Kurram Agency, Murree Hills and Azad Kashmir; Poonch (Stewart, 1972 and Yasin, 1976).

Ecology

It grows on deep, rich moist, well-drained soils and prefers moist shady sites. It requires a precipitation of 500 to 1200 mm/year or more. Prefers humid to sub-humid, cool-cold temperate climate with a temperature ranging from -20°C to 35°C, at an elevation between 1600 to 2900 M. It coppices well, young shoots are heavily browsed and tree attacked by leafy mistletoe (Troup, 1921). In order to maintain diversity of tree species, attempts must be made to ensure its regeneration with conifer species as it is important component of conifers.

Uses

The leaves and young shoots are extensively used as fodder for sheep and goats and seeds can be used as poultry and livestock feed (Watt, 1891; Gul and Khan, 1979). The heartwood is reddish-grey (specific gravity 0.95) with darker streaks, very hard and seasons well. It is very elastic, easily worked, wraps and used in building and agricultural implements and extensively used in manufacturing of charcoal (calorific value 4900 Kcal/Kg).

Name: Quercus glauca Thunb.
Syn.: Q. annulata Sm.
Vern.: Barin, Banni.

Description

A medium sized (5-20 m tall), monoecious, evergreen tree. It flowers between March and April and fruit ripens between July to August (Parker, 1918).

Distribution

It is native to India, Pakistan, Afghanistan, Nepal, Bhutan, China and Japan (Sheikh, 1992). In Pakistan it is found in Dadar, Garhi Habibullah, Murree, Kashmir, Poonch.

Ecology

The least common of our oaks, is sometime found in moist temperate climate with freezing temperature in winter. It requires a precipitation of 900 mm/year with an elevation range between 700 to 2000 m. It is managed for fuelwood but branches are lopped for fuel and fodder.

Uses

The wood is grey or grayish-brown, very strong and durable, handsomely mottled and polishes well and often used in the construction of bridges, for making door-posts, window-frames, rafter etc. Its wood is also used for fuelwood, and leaves for fodder.

Name: Quercus incana Roxb.
Syn.: Q.leucotrichophora A.
English name: White Oak
Vern.: Rien

Description

A medium sized (18-24 m tall), monoecious, gregarious, evergreen tree with rounded crown. It flowers and fruits between April-May and November-January respectively (Yasin, 1976).

Distribution

It is native of India, Pakistan, Nepal and
**Quercus rubra** L.

**Syn.:** Q. pedunculata Ehrh.

**English name:** English Oak

**Ecology**

The species is a light-demanding, but at seedling stage requires shade. The tree grows on a variety of geological formations including shale, gneiss, mica-schist, quartzite, limestone and deep rich moist, well drained soils and prefers moist shady sites. It requires a precipitation of 1000 to 2300 mm/year (Parker, 1918 and Trup, 1921). It prefers humid, sub-humid, moist temperate climate with a temperature range of 10 to 30°C on an elevation ranging from 1000 to 2400 m. The coppices well and shoots may be heavily browsed and is commonly attacked by leafy mistletoe. It is associated with Deodar and Rhododendron species. It has proved very useful as a nurse to the Deodar seedlings specially on hot slopes.

**Uses**

The bark is used in leather industry for tanning purposes. The wood is durable and used for fuelwood and construction purposes.

**Distribution**

In Pakistan this oak has been planted at various places on the hills such as Quetta, Parachinar, Murree hills etc up to 2200 m. It requires deep soils and grows well on areas of light snowfall. The species regenerate naturally.

**Description**

A large, (25 to 30 m tall) monoecious, evergreen tree. It flowers between May-June and fruit ripens between July and August.

**Uses**

The leaves and young shoots can be used for making brooms. The bark is used in leather industry for tannin purposes. The wood is durable and used for fuelwood and construction purposes.

**Distribution**

The species is native to India, Pakistan,
Afghanistan and Nepal.

Ecology

It grows in pure stands or in association with conifers on well drained soils of moist temperate climate with an annual rainfall of 1000 mm and freezing temperature, on an elevation ranging between 2500 to 3800 m. It coppices well, reproduces readily from seed, forms almost pure forests or associates with conifers. The wood is said to be liable the attacks of insects. The species is heavily lopped for fodder and fuelwood, as a result it is gradually disappearing form its natural habitat (Troup, 1921).

Uses

The leaves are used as fodder and stored in winter for the same purpose. Heartwood is grayish often with a reddish tinge, commonly used in the house building, door-frames and agricultural implements. It is a good firewood and an excellent source of charcoal.

REFERENCES


