

Tree Bean: Underutilized Legume Tree

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SUMMARY

With the increasing population pressure, in addition to severe challenges of food security, unemployment, and environmental degradation in the developing countries, the promotion of neglected and underutilized plant species may pave the way for food and nutritional security. Many of the unexploited, neglected and underutilized plant species are nutritionally rich and adapted to adverse situations. The enhanced use of such species can bring about better nutrition and fight hidden hunger. For e.g., Tree bean. It is an underutilized leguminous tree found in North-eastern states of India, other Southeast Asian Countries and the Pacific region. The plant is highly nutritious and reported to possess antibacterial, antidiabetic, antiproliferative, insecticidal activities and antioxidant, alpha-glucosidase and alpha-amylase inhibitory properties. Cultivation of this tree will not compete with other legumes in the same field and it could be a supplementary source of vegetable proteins if properly exploited.

INTRODUCTION

Parkia roxburghii G. Don syn. *Parkia timoriana* DC Merr. popularly known as tree bean belongs to the family Fabaceae (Mimosaceae). It is a fast-growing leguminous species generally planted in the home gardens, *jhum* fallows, marginal land along roads in northeastern India. It has several vernacular names viz., Urohi in Manipur, Khorial in Assamese, Manipuri seem in Bengali, Zawngtah in Mizo, Yongchak in Manipuri, Aoelgap in Garo, Unkamn-pinching in Nagaland and Bairethai in Dimasa. Flowers, tender pods and seeds of this plant are edible and are a good source of carbohydrates, vitamins, minerals, and proteins compared to other legumes.



Uses:

Ethnobotanically tree bean has much importance among the ethnic groups in various states of Northeast India. Decoctions of bark, leaf parts and fruit are used to treat various diseases like cancer, intestinal disorders, dysentery and skin diseases. Right from flowers, tender pods to mature seeds all are edible and provide a good source of nutrients. In Northeast India, the tribal communities from Manipur, Mizoram, and Nagaland, parts like pods, seeds, flowers, and young shoots are consumed as raw in salads, curries, and the bark decoction is used to treat diabetes. Other minor tribes make a paste from the bark and use it as a plaster to treat eczema.

Botany:

Parkia is a medium-sized tree having a grayish-brown bark with 15-25 m height. Leaves are bipinnately compound arranged spirally or alternate fashion bearing around 500 to 3500 leaflets in a single leaf. Inflorescence arises terminally in a racemose fashion. It is a head of flowers dangling at the end of a peduncle up to 45 cm long. The flowers are white and yellow about 1cm long. Pods are formed in clusters of 10-15 that remain suspended on

long heads each measuring 25–40 cm in length and 2–4 cm in breadth. The flowers appear from September to October, turn out to be a strap-shaped fruit in about four months from anthesis and are available for harvest from January to March. *P. roxburghii* exhibits annual phenological cycle with short phase of leaflessness followed by a flush of new light green shiny leaves.

Cultivation Practices:

Climate & Soil:

Tree bean grows well in different ranges of altitudes upto 3000m above MSL. The ideal temperature for its cultivation is 15-27°C. The plant performs best in annual rainfall of 3500mm/annum but survives down to 1750mm also. Deep soils with pH 5.5-7.5 considered ideal.

Propagation:

Seeds, semi hard wood cuttings and air layering. Seeds collected from mature, productive and healthy pods are propagated from March to April. Semi-hard wood cuttings of (3-4cm diameter; 2-2.5cm long) and air layers of (2-3cm diameter) considered best for propagation. The cuttings and layers treated with IBA@200ppm for 2 hours before planting. Temporary shade provided during summer. Seeds and stem cuttings are placed in polybags containing media of sand, soil, and FYM in the proportion 1:1:1 treated with carbendazim @1g/10 kg of the mixture in the month of April to June. Transplanting can be done at a spacing of 10m × 10m when the seedlings attain 6months old and 0.5m tall.

Cropping System:

Tree bean can be grown along with high value spices like Ginger and turmeric, cucurbits like pumpkin, bitter gourd, cucumber etc., and other leguminous crops like Soya bean, groundnut, cowpea, french bean, pea etc. 3-4 tree bean can be grown as integral part of kitchen garden in homestead farming. It is also intercropped with banana, *Areca* and other multipurpose tree species in different parts of Northeast India. In Southern Assam it is integrated in pineapple cultivated areas. In Meghalaya *P. roxburghii* is grown with different multipurpose tree species like *Alnus nepalensis*, *Gmelina arborea*, *Michelia oblonga*, *Prunus cerasoides*, *Symingtonia populnea*.

Harvesting For Pods & Seeds:

The pods are harvested during the months of September-march. The maturity indices for harvesting is greenish outer skin. Depending upon size & length each flower stalk produces 10-20 pods. They can be easily peeled off by a scrapper or traditionally using bamboo mounted with sickle to cut the peduncle. For seed production the pods are retained on tree until pods become dark black color. Seeds are extracted by removing white creamy powdery layer of the pod and sundried. Each pod produces nearly 9-20 oval shaped seeds having deep black colour seed coat. Demand of green pods high during peak season whereas dry seed during lean period. The seeds are exported from Myanmar during shortage. The total of 9000-13000 pods/tree are produced during favourable season. Pods can also be stored at low temperature of 0-4°C.

CONCLUSION:

With the advent of the Green Revolution focusing on increasing crop yields to ensure adequate calories, the cultivation and utilization of this underutilized crop tree bean can bring about better nutrition, fight hidden hunger and improve livelihood of the non-traditional growers.

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