

# **Melia dubia: a potential tree**

## **and source of income generation under agroforestry**

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*In the recent years, it has been observed that agricultural crops are badly affected in production due to several factors like environmental problems such as climate change, global warming, uncertainty in rainfall pattern, shrinkage of fertile land due to growing population etc. which ultimately not only influencing the socio-economic status of Indian farmers but our country also. Therefore, there is a need to spread the knowledge and practical information among the farmers by raising fast growing forest tree species along with agricultural crops on their fields so that such trees can fulfill several purposes like maintaining the soil-health, providing fodder to the animals and help in income generation. In this regard Melia dubia-based agroforestry system is one of the viable option to increase the farmers income on a sustainable basis as well as environmental and ecosystem security point of view.*

**Key words:** Agroforestry, Income, *Melia dubia*, Productivity, Soil health

THE native forests, which are not sustainably managed, have become one of the greatest source of the world's wood supply. The rate of planting is inadequate whereas many developed and developing countries are involved in planting on larger areas of their land to meet current and projected future demand. It has been observed that the timber demand in India is very high in the present scenario due to which the need of commercial agroforestry is ever increasing day-by-day. In India the industrial demand for wood is predicted to increase from 74 to 153 million m<sup>3</sup> between 2005 and 2020. Therefore, it is projected that India's more than 50% of the total wood supply will come from outside the forest area. Keeping in view the above such problems the agricultural scientist should find a mid-way which on one hand can be able to conserve our natural resources and on another hand can be able to generate the income of the farmers. In this regard *Melia dubia*-based agroforestry is a best option not only to bridge the

gap between demand and supply of wood but also become a better initiative as a long-term measure for the environmental and ecological sustainability.

*Melia dubia* belongs to the family Meliaceae and has its trade name as Malabar neem. It is an indigenous fast growing tree species with multipurpose benefits such as timber, plywood and fuel wood. It is highly suitable for agroforestry to generate higher income under various agroclimatic conditions. In the recent scenario it has also been observed that this species has greater attraction by farmers and plantation growers due to its various characteristics such as fast growth, straight stem, less shade effect etc.

### **Planting**

*Melia dubia* grows on a variety of soils; however, fertile, deep and sandy loam soils are best for its growth. It has been stated that the growth of this tree can be reached upto 40 feet (12 m) within two years after planting which can be mechanically

pruned and harvested. It is commonly found in the hills at elevations ranging from 600 to 1,800 m. However, it can be successfully grown in semi-arid region also with adequate irrigation. At the plantation establishment, generally 6-month-old seedlings are planted in pits (45 cm<sup>3</sup>). The spacing of planting under agroforestry is generally varies on the basis of individual land holding, sort of intercropping, water availability and farmers requirement. Under agroforestry, optimal spacing of tree-to-tree and row-to-row should be kept 5 m × 5 m while ideal spacing of tree-to-tree and row-to-row is 8 m × 8 m. However, farmers usually plant at a spacing of 3 m × 3 m or 3 m × 4 m.

### **Tending operations**

Ploughing, weeding and cleaning are those tending operations which can be carried out in *Melia dubia* plantations, but in intercropping these operations are intensively paying attention on agricultural crops. In bund-planted areas of *Melia*



*Melia dubia*-based agroforestry system

*dubia*, the operations like thinning and pruning are also carried out when there is shade effect on agricultural crops.

### Plantation management

In several studies it has been estimated that the growth performance of this species in case of height and DBH was found better when planted on bunds and attaining the harvestable size within four years of plantation.

### Irrigation and fertilizer requirements

During the dry season, this tree species grows well, if it is irrigated every 10-15 days. The growth performance of *M. dubia* seedlings and trees can be further enhanced, if the fertilizer mixture of 25 to 50 g/tree nitrogen, phosphorus, and potassium will be incorporated in to the soil. This mixture is applied twice in a year. Depending on the growth and development of the tree, fertilizers can be applied as per requirement.

### *Melia dubia*-based Agroforestry

It is a good agroforestry tree species which can support a variety of

crops throughout its phase of cultivation. In the first three years, intercropping can be done with various annual crops and then spices like pepper can be grown. Intercrops like groundnut, chilli, turmeric, blackgram, papaya, banana, melon, sugarcane etc. are being successfully cultivated. Along the field bunds, if *Melia dubia* is planted in a single row, about 60 trees can be planted at six feet (1.8 m) spacing which will fetch an income of about ₹ 2 lakhs in the sixth year.

### Yield

This tree gives good economic returns due to its property of fast growth. It can be used in match or plywood industries. Under high density plantation 1,000 to 1,600 trees can be planted in an acre and the yield would be 30-40 tonnes/acre which is possible at the age of 4 years old plantation.

The tree attains a volume of 15 cu. ft. at the end of 15 years of plantation and earns revenue of ₹ 350 per cubic foot from the 5<sup>th</sup> year onwards. Growth rate ranges from 20 to 25 cm per year in intensively managed plantation than unmanaged

plantations where the growth rate ranges only from 6 to 8 cm per year.

### Uses

Wood obtained from *Melia dubia* has various uses like packing cases, matchbox sticks, pencils, mini-furniture like stools, benches, wooden racks and packing industries, wooden tables, interior decoration, cigar boxes, tea powder boxes, musical instruments, splints and building purposes. It has also a medicinal value and also used for fodder.

### SUMMARY

Each tree of appropriate girth can fetch up to ₹ 4,000 to 5,000 per tree over a 6 to 7 year period, if sold as veneer. It plays a vital role in multi-farming of sheep, goat and dairy farming. In this way due to its various uses, it can become a most important income generating tool among farmers.

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### **Jai Kisan, Jai Vigyan**

- A total of ₹ 788.33 crores have been sanctioned for opening six new agricultural colleges for eastern India under Central Agricultural University, Imphal, and a new Central Agricultural University in Meghalaya.
- For the establishment of two new agricultural research institutes in Asom and Jharkhand, a sum ₹ 100 crores is allocated.
- First academic session of the Rani Lakshmibai Central Agricultural University has been allocated for four new agricultural colleges in Datiya and Jhansi.
- An Memorandum of Understanding was signed for transforming the Rajendra Central Agricultural University, Pusa, Samstipur, Bihar. A proposal of ₹ 400 crores is submitted in EFC.
- Post-Graduate Institute of Horticulture is being established in Amritsar, Punjab.
- Foundation stone of the Indian Institute of Agricultural Biotechnology is laid at Ranchi for promoting agricultural biotechnology.