

# DYSOXYLUM MALABARICUM

Family: Meliaceae

Local name: Vella-akil

## 1. Introduction

*Dysoxylum malabaricum* Bedd. (syn. *Dysoxylum glandulosum* Talbot) is locally known as Vella-akil. Commercially the tree is called White cedar.

The tree belongs to the flowering plant family Meliaceae.

The species is fairly common in the evergreen forests of Kerala and is endemic to the Western Ghats of peninsular India, from Karnataka to southwards.

It is a shade-loving species, especially in the seedling and sapling stages. The tree prefers the climate and soil of evergreen forest areas.

The tree grows to an average height of about 35 m and attains a maximum girth of 2.5 m.

Bark is smooth and grey in colour with white warts.

The pale green leaves are oblong and cretaceous. The flowers are fragrant and borne in axillary paniculate inflorescence.

Fruits are bright yellow in colour, capsular, and each of them contains 3-4, reddish brown, bluntly trigonous seeds.

The logs are almost straight and cylindrical with about 25 m length and up to 1.5 m girth.

The sapwood is whitish or greyish-yellow and the heartwood is yellow, golden yellow or yellowish-brown in colour. The wood is moderately hard and heavy, i.e. 720 kg/m<sup>3</sup>. The wood is fine-textured and straight or somewhat interlock grained. It is easy to season and saw, and takes polish very well.

The wood is durable and is used in construction work, for decorative panelling and as aircraft plywood. Also, furniture, tool handles, artificial limbs and other rehabilitation aids, textile mill accessories, engineering instruments, etc are made of White cedar. The wood oil is a remedy for ear and eye diseases and a decoction of wood is used in the treatment of rheumatism.



## 2. Plantation Technology

### 2.1. Seed collection and processing

#### 2.1.1. When and how to collect seeds

- Trees of *D. malabaricum* flower from February to May and fruits ripen during May to July.
- The longitudinally furrowed capsules, when they attain a bright yellow colour, is the right time for collection.
- The ripened stage of fruits can be ascertained either by viewing them on standing trees with the help of binoculars or by verifying those fruits ripened and fallen on the ground.



- To gather seeds, forest floor below the mother trees can be swept clean and plastic sheets spread out for about 5-7 days, and the fully ripened fruits, fallen on the plastic sheets can be gathered without litter, stones, etc.

- Fruits which ripen and fall on the forest floor during the South-West monsoon period, are often affected by a dipteran pest.
- Remove pest infected and malformed fruits.
- The fruits may be filled in gunny bags and transported to the nursery site for processing.

#### 2.1.2. How to process the fruits/seeds

- Remove the fleshy rind of fruits covering the seeds by hand with the help of a sharp knife and wash in water.
- Spread the washed seeds in shade for 2-3 hours before sowing.
- The seeds with green cotyledons at the time of collection give quick and better rate of germination.

#### 2.1.3. How long the seeds can be stored

- The depulped, washed and dried seeds can be stored in wet gunny bags for about 6 weeks without much loss in germinability, as reported earlier.
- However, it is better to sow them as early as possible for maximum germination.

#### 2.1.4. Seed germinability

- Freshly collected and processed seeds give about 20 per cent germination when sown in nursery beds.
- Seeds pre-soaked in water and stored in gunny bags for 10-15 days give less germination.

### 2.1.5. How to control seed pests and diseases

- A dipteran pest belonging to the genus *Daccus* often heavily attack the fallen fruits. From the early stage of development, the seeds are infested by the pest.
- Care should be taken to ensure that the fruits collected for the extraction of seeds are not pest affected.
- Seeds of *D. malabaricum* harbour several fungi, mostly belonging to the group of storage moulds.
- Treatment of seeds with Hexathin or Captan @ 4 mg per kilogram can reduce the incidence of spermiplane microflora, which cause seed rot.



### 2.1.6. Quantity of seeds required for one hectare plantation

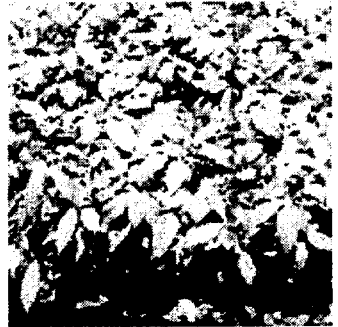
- Ripened fruits are longitudinally furrowed and have an average size of 5.5 cm x 6 cm. About 10-12 fruits weigh one kilogram.
- On an average, the seeds are of 3.4 cm x 2.4 cm size and about 124-128 seeds weigh one kilogram.
- For raising one hectare plantation at 2m x 2m spacing, about 4160 fruits which weigh about 378 kg have to be collected and processed to get about 12,500 seeds, which weigh about 100 kg. At a germination rate of 20 per cent, 100 kg seeds will produce 2500 seedlings.

## 2.2. Nursery establishment

### 2.2.1. How to raise seedlings

#### 2.2.1.1. Standard nursery bed

- Fresh seeds not affected by pests can be sown for germination.
- Use raised standard nursery beds of size 12 m x 1.2 m for production of seedlings. The nursery beds may be prepared in May-July.
- Dibble the seeds at a gap of 5 cm, in drilled lines, taken 20 cm apart. About 4 kg of seeds can be sown in one standard nursery bed.
- Germination will start within 18 days and will be completed by about 30 days. About 20 per cent of the sown seeds germinate.



- Overhead shade and watering 2 times a day are necessary for the maintenance of seedlings in the nursery bed.
- Details on optimum shade and watering in nursery not available.
- Within four months, the seedlings attain an average height of 15 cm, when they can be pricked and poly-potted.



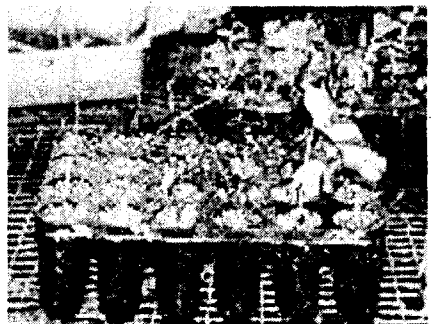
- Use polythene bags of 23 cm x 17 cm size, filled with potting mixture (3 soil : 1 sand), for potting the seedlings.

#### 2.2.1.2. Dibbling in poly-pots

- As the germination rate is as low as 20 per cent, dibbling of seeds in potting mixture filled poly-bags may not be a suitable method.

#### 2.2.1.3. Rooting of cuttings

- Collect tender, apical stem cuttings with 2-3 nodes from seedlings or saplings and dip in water immediately after collection.
- Remove half the portion of the leaf blade at lower nodes without damaging the apical bud. Immerse the cuttings in Carbendazim solution (1 g/1 litre) for 15 minutes, to prevent any fungal attack.
- Prepare the rooting hormone Indole Butyric Acid (IBA) at 3000 ppm concentration, by mixing 300 mg of IBA with 100 g of purified talc, in a mixer.
- Dip the lower end of the Carbendazim treated cuttings in the talc preparation and then planted in root-trainers of 10 cm x 5 cm size, filled with vermiculite.
- Keep the hormone treated cuttings in the mist chamber for rooting, where the temperature is maintained at 35-40°C and humidity is around 70-80 per cent.
- Rooting will take place within 20-30 days. Then take out the root-trainers from mist chamber and keep them in a glass house. As new leaves emerge, the rooted cuttings can be poly-potted.



- By this method, about 12.5 per cent of the cuttings can be converted into potted seedlings, which need hardening for few days before field-planting.

### 2.2.2. Control of nursery pests and diseases

- Mild attacks of a leaf webbing caterpillar, acridid grasshoppers and mealy bugs affect the seedlings in the nursery, which need no control measures.
- In seed-bed nurseries of *D. malabaricum*, collar-rot disease caused by *Fusarium moniliforme* is common, affecting 20-30-day-old seedlings. Application of Dithane M-45 (0.1% a.i.) can control the infection.
- Shot-hole disease due to the infection of *Colletotrichum gloeosporioides* in the nursery seedlings can be controlled by foliar application of Bavistin (0.05% a.i.).
- Bacterial leaf-spot in *D. malabaricum* seedlings caused by species of *Xanthomonas* can be controlled by spraying Plantamycin (0.01% a.i.).



## 2.3. Plantation establishment

### 2.3.1. How to prepare the field for planting

- Select a suitable evergreen forest area to out-plant the seedlings.
- Weed the area to remove the undergrowth and ground flora.
- Align the plot at a spacing of 2 m x 2 m or more.
- Take pits of 30 cm x 30 cm x 30 cm size to plant the seedlings.
- Data on different spacing and pit sizes not available.

### 2.3.2. How to out-plant seedlings

- Plant the poly-potted seedlings maintained in the shaded nursery for 8-10 months, by the onset of South-West monsoon, in June.
- Remove the polythene covers without damaging the root system of the seedlings and the covers may be hanged on the stakes which are fixed at each pit-point, while aligning the plot.
- The seedlings can be planted in such a way that the level of ground is tallying with the level of soil around the seedling.



- Provide little terracing around the field-planted seedlings to avoid stagnation of water.

### 2.3.3. Control of pests and diseases in plantation

- Mild feeding by caterpillars, grasshoppers and mealy bugs may be seen in field-planted seedlings, which need no control measures.
- Minor foliage infection and shot-holes caused by *Colletotrichum gloeosporioides* and sooty mould in field planted seedlings, have not much impact on the survival and growth of seedlings.

### 2.3.4. Plantation maintenance and growth of seedlings

- About 97 per cent of the field-planted seedlings survive during the first month after planting and the survival rate may be reduced to about 61 per cent after twelve months, due to drought.
- Seedlings not affected by drought register an average height of 34.3 cm within twelve months after field-planting.
- Details on nutrient deficiencies and their symptoms not available.
- Ten year old trees are reported to attain a girth of about 38 cm and height of about 10 metres.

## 3. Calender of operations

	JA	FB	MA	AP	MY	JU	JL	AU	SE	OC	NV	DC
Seed collection					■	■	■	■				
Nursery establishment					■	■	■	■				
Planting (next year)							■	■				
Weeding/mulching											■	■

## 4. Further reading

FRI, 1981. *Troup's Silviculture of Indian Trees*. vol. 3. Controller of publications, Delhi. pp. 166-169.

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Rai. S.N. 1999. *Nursery and Planting Techniques of Forest Trees in Tropical South Asia*. Eastern Press, Bangalore. pp. 89-90.