

# LAO TREE SEED PROJECT



*SPECIES MONOGRAPH NO. 4*



*Afzelia xylocarpa*  
(Leguminosea, Caesalpinaceae,  
Bean or pea family)  
Mai Te Kha, Mai Kha

**NAFRI**

**DANIDA**



## Published species monographs

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7. *Albizia procera*
8. *Alstonia rostrata*
9. *Alstonia scholaris*
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12. *Aquillaria crassna*
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14. *Bauhinia variegata*
15. *Betula alnoides*
16. *Bischofia javanica*
17. *Carpinus poilanei*
18. *Castanopsis echinocarpa*,  
*C. hystrix* and *C. ceracantha*
19. *Castanopsis tribuloides*
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36. *Pterocarpus macrocarpus*
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38. *Quercus serrata*
39. *Sapindus rarak*
40. *Schima wallichii*
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42. *Spondias axillaris*
43. *Swietenia mahagoni*
44. *Toxicodendron (Rhus)*  
*succedanea*
45. *Tectona grandis*
46. *Toona ciliata*
47. *Vatica harmandii*
48. *Wrightia arborea*
49. *Xylia xylocarpa*
50. *Zanthoxylum rhetsa*

**This species monograph is prepared by:** Chanhsamone Phongoudome

**Design by:** Chongkham Phonekeo

## Description

### Remark

Mai Te Kha is one of the classic mixed deciduous forest tree species that have been over logged and is listed as an endangered species in the region, including Lao P.D.R. It has been planted mainly for genetic conservation purposes.

The large black seed pods remain on the trees for most of the year, after seed have been shed already.

Mai Te Kha is a large tree up to 30 m tall and up to 1.5 m in diameter. Its leaves are shed in the dry season. It is a slow growing and scattered species, mixed with *Tectona grandis* (Mai Sak), *Pterocarpus macrocarpus* (Mai Dou) and *Peltophorum dasyrbachis* (Mai Sa Phang) and *Lagerstroemia floribunda* (Mai Puay). This species can be found in mixed deciduous, dry evergreen or dry dipterocarp forest. Flowering is in December-March and fruiting is in November-February 1 year later.

### Use

The attractive reddish timber is very valuable in the region and is often used for construction, furniture, plywood, veneer, musical instruments, interior decoration and wood carving. The wood from the large branches is also used and the lumped wood near the base of the trunk is highly priced. The young green seed are edible. The bark is used for tanning leather. It is a nitrogen fixing tree and suitable for agroforestry and for soil improvement, but planted only on a small scale.



*Wood of Mai Te Kha is used for beams in house construction and furniture.*

## **Site requirements**

### **Climate**

Mai Te Kha grows on altitudes of up to 900 m, and receives about 1,000-2,500 mm of rain per year. The length of the dry season is 4–6 months. Mean annual temperature ranges from 15–35 degrees Celsius.

### **Soil**

Mai Te Kha grows on a wide range of soils, from clay, laterite to sandstone, but requires good drainage on flat land or gentle slopes.

### **Establishment of plantation**

The planting site is cleared and ploughed in March–April and planting holes are prepared before planting in May to July. A firebreak is made with 3–6 m wide strips, by ploughing, digging or controlled burning.

Fencing is required to protect the seedlings against cattle.

During transportation to the planting site the seedlings should be covered by a shade-net to prevent overheating or drying out. Seedlings which are 6–12 months old are 0.60–0.80 m tall with a root-collar of 0.7-1 cm in diameter, are suitable to be planted out.

Artificial or natural fertiliser can both be used, depending on the soil conditions. In a diameter of 0.50 m around each seedling, 10 gram of fertiliser NPK 15-15-15 or 16-20-00 is applied after 1 month. A second application of 50–100 gram is given after 2-3 months, and another one at the end of the rainy season. For seed production an application of 150-200 gram in the second or third year can be given.

Weeding is carried out 2-3 times per year, at the same time as applying fertiliser, with the first weeding after 1 month of planting. Weeded material can be placed around seedlings as mulch to conserve soil moisture.

Replacement planting can be done after 2-4 weeks.

Thinning is needed when the canopy closes, often every 5 years. Rotation periods for timber production can be 50 years or more.

Natural regeneration and coppicing of Mai Te Kha species is very strong, but the growth performance has not been observed yet.

## Seed handling

### Basic data

About 3-5 kg of seed pods produce about 1 kg of seed, with 110–200 seed per kg. The rate of germination for fresh seed is about 90-95%.

### Seed collection

Ripe seed should be collected in December-February from 15 year old seed trees. Mai Te Kha trees are becoming rarer with seed trees very scattered, costing it much effort to collect sufficient amounts of quality seed. The almost black seed pods with the hard, dark coloured seed can be collected from the tree by climbing or collecting from the ground after shaking the fruiting branches. Seed which were on the ground for a few months have been collected



and shown no damage. Seed-pods are dried in the sun until they open up, normally after 2-3 days, and seed is shaken out.

The yellow aril must be carefully removed from the seed by cutting it off with seccateurs or a sharp knife.

### **Storage**

Mai Te Kha seed which is properly dried can be stored in airtight containers in a cool and dry place. In cold storage seed can be kept for 2-3 years.

### **Pre-treatment of seed**

The seed coat of this species is so hard that pre-treatment with hot water may not be sufficient. With a nail-clipper

*With a nail-clipper, cut a small piece of the Mai Te Kha seed coat.*



make a small cut in the seed coat at the opposite end of the aril so that the inside is partially visible. After that the seed is soaked in water for 12 hours before sowing.

### **Nursery techniques**

#### **Seed sowing**

Direct sowing of pre-treated in January-February in polythene bags or in a seed bed is possible. In the seed bed seed should be sown 2-3 cm apart and covered with 1 cm of sand.

### **Container**

Polythene bags of 4 x 6 inches are needed when seedlings stay in the nursery for 1 year. For 6 month old seedlings bags of 3/5 x 7 inches are useful.

### **Soil**

The soil in the sowing beds and polythene bags should consist of 1 part forest topsoil and 1 part river-sand. About 10% coconut husks can be added to improve the seedlings root growth.

### **Transplanting**

After 12 days Mai Te Kha seedlings are 2-3 cm tall and have developed 2 cotyledon leaves, after that they can be transplanted into polythene bags.

### **Fertiliser**

Fertiliser NPK 15-15-15 is applied after 2 weeks to stimulate seedling growth.

### **Weed control**

Manual weeding needs to be carried out once a month to decrease growth competition for the seedlings.

### **Root pruning**

Root pruning is necessary for seedlings staying in the nursery for a second year. This should be done at least 2 months before planting them out. Cut the roots growing out of the polythene bags.



*Root pruning of older Mai Te Kha seedlings.*

### **Hardening off**

Hardening off can be done by increasing sunlight in the beginning of June from 50 to 70%, about 2 months before planting the seedlings out.

### **Shade and shelter**

Around 50-70% of sunlight is required for this species. Leaves are tough so protecting against heavy rain is not necessary.

### **Insects and fungi**

Sometimes termites affect the young seedlings, but this is limited. When spotted remove the insects or infected seedling parts.

# LAO TREE SEED PROJECT



**Copies of the species monographs can be obtained from:**

Street address:

Lao Tree Seed Project, Nam Souang Forest Research Centre,  
Naxaythong District, Vientiane Municipality, Lao P.D.R.

Postal address:

Lao Tree Seed Project, Box 9111, Vientiane, Lao P.D.R.

Tel.: +856-20-517 408

Tel.: +856-20-509 291

e-mail: [LTSP@laotel.com](mailto:LTSP@laotel.com)

