

## Red Sanders

(*Pterocarpus santalinus* L.) commonly known as lalchandan or rakta chandan in Hindi, is a small to medium sized tree of tropical dry deciduous forests in southern hill ranges of Andhra Pradesh in southern India. The species is highly valued

in international market for its heavy, dark, claret-red heartwood which finds an array of uses in furniture, making, carvings, musical instruments, medicine and also in extraction of dye. A red colored dye- 'santalin' extracted from heartwood has long history of use as organic coloring agent in liquor industry and food industry.

Owing to its occurrence in a small area, poor regeneration and over-exploitation due to illegal felling the red sanders is under severe threat in its native hill ranges. Despite of a ban on felling and sale of red sanders trees in natural forest by government, good quality red sanders wood are illegally traded in international market and fetch very high price. Some State Forest Departments have raised plantations of red sanders successfully. Many tree growers and farmers have also started cultivating this species on farm lands in Andhra Pradesh, Tamil Nadu, Karnataka, Gujarat and in many other states.

### Soil and Climatic Requirements

In its places of natural occurrence, the species generally grows well on dry, hilly and rocky grounds where other plant species struggle to survive. The soils in these areas have originated from gneiss, quartzite, shale and lateritic rocks which are poor in nutrients. Therefore, deep gravelly lateritic loam soils are preferred for its cultivation. Well drained, gravelly soils with neutral to acidic pH are better suited. Compact clayey soils with alkaline pH and saline soils are avoided. It does not tolerate waterlogged and shallow soils. The preferred



rainfall range is 500 mm to 1000 mm. Though it can be grown in higher rainfall (>1800 mm) areas, the heartwood formation and its quality may suffer. The species is well suited to hot dry climate and prefers mean annual temperature range 26-28° C and maximum temperature may reach up to 45° C.

### Seed collection, Treatment and Sowing



Mature and dried winged fruits can be collected from trees during March to April. Each winged fruit contains one or rarely two tiny seeds inside. The dried fruits are soaked in water overnight and dried during day. Alternate soaking and drying for 3 days before sowing on seed bed enhances germination. Germination percentage is generally 8- 20 %.

### Nurseries Techniques

**Seed Bed Preparation:** A well-drained soil with small pebbles or gravel is preferred. Soil is dug up to a depth of 30 cm and clumps are broken to powder. Farmyard manure and



insecticide like BHC are mixed in the soil. Standard size beds (12 m x 1.2 m x 0.3 m) raised above ground are prepared. Seed bed should not be under shade and should receive ample sunlight. 10- 15 kilograms of pretreated seeds are

sown. About 1 cm sand is spread over the seeds followed up with a thin cover of hay or brushwood, if necessary.

**Preparation of Stumps:** One year old seedlings may be planted directly in field. Stumps are also prepared from 1- 2 year old seedlings. Stumps prepared from 2 year old seedlings give better survival percentage (i.e. up to 87%) in forest area.



### Plantation Techniques

For plantation of red sanders land should be clear-felled and pits of 30cm x 30 cm x 30 cm size are dug at 3.0 m x 3.0 m espacement. However, recent observations support that red sanders being a light demanding species

wider spacing of 4 m x 4 m or 5 m x 5 m are preferable. Either, 1-2 year old stumps or 1 year old seedlings are planted during monsoon season. During initial 3-4 years, weeding and tending are necessary. Plants should be protected from browsing by cattle, goats and also by deer. It is advisable to maintain single stem and avoid multiple stems from the base.

### Rotation, Harvesting and Yield:

Clear data on rotation and yield are not currently available as red sanders plantations are not raised in large scale and harvested regularly like other tree species. Red





Sanders is mainly harvested for red colored heartwood and sap wood has little value. Generally, heartwood formation starts at 15-20 years of age and heartwood increases with age. General observations on growth of plantations raised by various Forest Departments and trees raised on farm bunds indicate that at least 40-50 years are required for harvest of red sanders trees grown in plantations. Under farm boundary planting conditions, the growth rate is slightly faster and trees may be harvested at 30-35 years after planting. The red sanders trees are generally slow growing species by nature, and it is estimated that it takes 80-100 years to reach harvesting stage (i.e., 70.-80 cm girth ) in natural habitats in Andhra Pradesh.



#### Uses and Market

The red sanders wood has little use locally and major demand is in international market. Currently, only natural red sanders wood are being traded in market. The logs are dressed by completely removing the bark and sapwood and red coloured heartwood is exposed. The graded logs are auctioned by Forest Departments. The wavy grained wood has demand in the international market and is primarily exported to Japan for manufacturing a special musical instrument called as 'Shamisen'. Main market is in China, where the wood is called "Zitan" and mainly used in making high-end furniture and musical instruments and to lesser extent in medicine. AFRI is raising seedlings of Lal Chandan at AFRI model nursery.



Red Sanders Products



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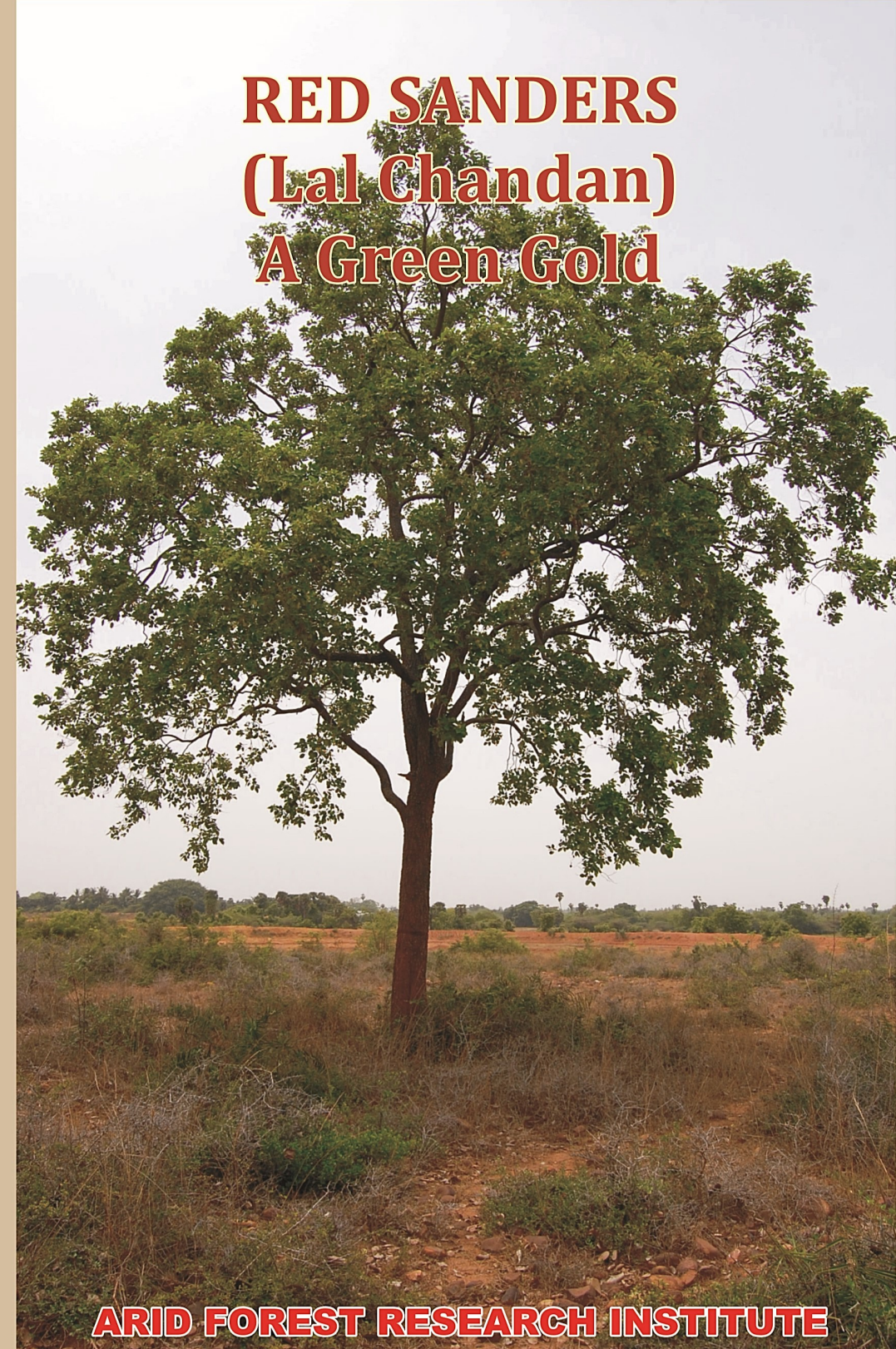
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## RED SANDERS (Lal Chandan) A Green Gold



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