EP No: 26/2022-23 ASSEMBLING CPTS PLANTING MATERIALS OF KHAYA SENEGALENSIS, SWIETENIA MAHAGONI AND MELIA DUBIA IN THE FORM OF HEDGE STOOL - ESTABLISHING HEDGE STOOL NURSERY FOR KHAYA SENEGALENSIS, SWIETENIA MAHAGONI, AND MELIA DUBIA

INTRODUCTION

Tree improvement of the project provides for Assembling CPT's planting materials - Assembling CPT's in extension Centres in following forms like hedge, seedling seed orchards, clonal seed orchards, seed stands to ensure supply of quality planting materials. It also emphasizes the establishment of hedge stool for species Melia, Neem, Casuarina, Ailanthus etc.'

Khaya senegalensis and Swietenia mahagoni are hardwood species from Africa and have been introduced to India, and whereas *Melia dubia* is native to South Asia and is distributed throughout India (except Jammu & Kashmir, Himachal Pradesh, and Sikkim)*. These species yield high-quality wood for diverse applications, but little has been done towards an effective propagation method for large-scale production in nurseries. Since the mother plant available for *Kahya senegalensis* is very few number the large scale production of this timber species is possible only using clonal propagation. Keeping all this in view, this research program has been framed to create a hedgestool nursery at selected extension centres aimed at establishing propagation strategies for *Khaya senegalensis, Swietenia mahagoni* and *Melia dubia* which are of prime importance for assisting breeding programs of this species.

Hedge stool nursery is created using planting seedlings at a distance of 0.5 m apart and allowing the plant to grow up to a height of 1 m and continuous pruning of upper branches to get a maximum number of subsidiaries shoots for the collection of clonal materials.

Hence it is important to establish hedge stools of (1) Khaya senegalensis, (2) Melia dubia and (3) sweltenianahagory in the above said centres.

<u>Existing hedge stools for selected species:</u>

An assemblage in the form of a hedge-stool for *Khaya senegalensis* has established during 2019-20 in Harur Modern Nursery Centre over an extent of 0.02

ha. with 300 ramets comprising 10 clones. The size and no. of individualsin the stool is minimal when compared to the demand for the species. In respect of *Melia dubia*, and *Sweitenia mahagoni* no hedge-stool assemblage is available in the Dharmapuri district.

An assemblage in the form of hedge-stool for *Melia dubia* has established during 2016-17 in Alwarmalai Modern Nursery Centre over a small extent of 0.02 ha with 300 ramets comprising of 5 CPT's. In respect of *Sweitenia mahagoni* and *Khaya senegalensis* no hedge-stool assemblage is available for Villupuram district nurseries. No Hedge stool for the selected species is available in research centres under the control of the research wing of Tamil Nadu Forest Department.

Under Green Tamil Nadu Mission in 2022-2023, in Tamil Nadu 1139607 no. of Mahagony, 179868 No. of *Melia dubia* have been planted, which enlightens the demand for the species. All the selected species in the target are highly suitable for meeting the growing demand of the wood-based industries. In the scenario, hedge-stool for the selected species in the target will be established in the Forestry Extension Centre, Harur in Dharmapuri district and Forestry Extension Centre, Bolupalli in Krishnagiri district and the same will be handed over to the forest divisions concerned in the future continual use of planting materials as envisaged in MOD of the TBGPCCR.

Objectives

1. To assemble CPTs of selected species in forestry extension Centers

2. To assemble CPTs of selected species in the form of hedge stool.

3. To ensure the supply of quality planting material.

4. To train Forestry Extension staff in the sustained maintenance of the hedge stool.

METHODOLOGY/ TECHNICAL PROGRAMME OF THE RESEARCH

A nursery was established at Harur Modern Nursery Centre of Dharmapuri Modern Nursery range to raise propagules of *Khaya senegalensis*, *Swietenia mahogany*, and *Melia dubia* total of 1,980 propagules were raised (each centre 900

propagules) including 10% casualties. The propagules of *Melia dubia* were collected from CPTs (MTP-1, MD-05, MD-15, MD-32, and MD-45) maintained at the Alwarmalai Research Centre, with 60 propagules per CPT. The propagules of *Khaya senegalensis* were sourced from existing hedge stools at the Harur Modern Nursery Centre. *Swietenia mahogany* propagules were raised from CPTs identified from Pachamali reserve forest. Propagules are trimmed with 15 cm height with two leaf interodes and treated with 0.2% bavistin water to presevent fundal infection. IBA and IAA have been used as growth promoting and rooting hormone.

Propagules established initially at 10 cm x 20 cm polybags filled with a mixture of red earth and sand in a 1:1 ratio. After successful rooting, the propagules were transplanted into 16 cm x 30 cm polybags containing red earth, sand, and FYM in a 1:1:1 ratio. Inputs of vermicompost (35 g/bag), VAM (15 g/bag), Azospirillum (6 g/bag), and Phosphobacteria (6 g/bag) were applied exclusively to the 16 cm x 30 cm polybags to enhance growth.

The planting operations have been carried out in two different forest extension centre (Harur and Bollupalli Extension Centres) with the area of 0.045 hectares each centre. Totally 20 number of propgules have been planted with 0.5m x 0.5 between plant spacing and 1m x 1m between rows., 900 plants have been planted in each centre with pit size of 30 cm^3.Trenches measuring 10 m x 1 m x 0.5 m were dug and filled with a mixture of sand, red earth, and FYM in a 1:1:1 ratio, along with bio-fertilizers such as vermicompost (0.5 kg/plant), VAM (25 g/plant), Azospirillum (10 g/plant), and Phosphobacteria (10 g/plant).Green shade provided for entire hedge stool nursery to prevent from wildlife damage.

OBSERVATIONS TO BE RECORDED:

1. Soil test will be done before planting and at the end of the experiment.
2. Initial height of the plants will be recorded.
3. Effect of irrigation to the species and growth rate for different ciones will be recorded in plot files.
4. No. of coppice shoots emerging will be recorded.
5. Survival rate of seedlings produced from selected cappice willbe recorded.
6. Photo will be taken frequently and documented.
7. As envisaged in the MOD of the TBGPCCR the hedge stool will be handed over to the divisions concerned

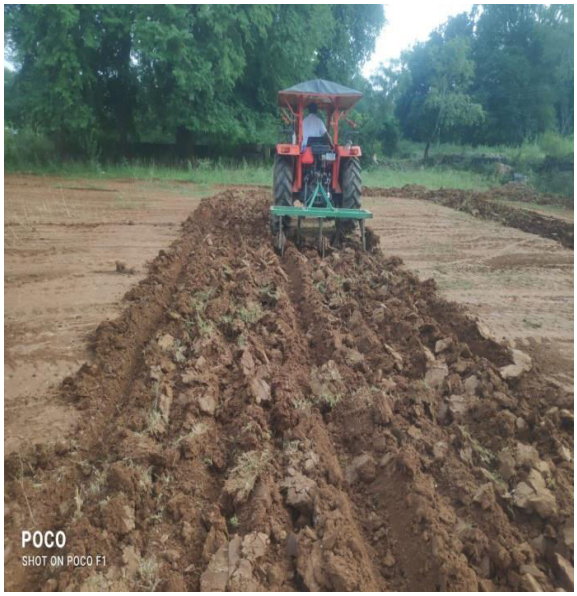
INTERIM FINDINGS:

The experiment is ongoing.

Khaya senegalensis Hedge stool Nursery

Switenia mahagony Hedge stool Nursery

Melia dubia Hedge stool Nursery



Ploughing

Planting

Hedge stool – Immediately after planting