

## NEW TECHNICAL PROGRAMME

### Department of Silviculture and Agroforestry

#### Experiment No. 21.5.3.4

01.	Experiment No. and Title	:	<b>Study of growth, biomass and volume productivity of <i>Melia dubia</i> Cav. under different spatial geometries in South Gujarat</b>
02.	Budget Head	:	12054
03.	Collaborative department, if any	:	-
04.	Background information	:	
	<p><i>Melia dubia</i> Cav. (Syn. <i>Melia composita</i> Willd.) is commonly known as Burma Neem is fairly large, deciduous and fast growing tree. It grows upto a height of ~20 m and straight cylindrical bole of ~ 9 m. Due to its wide distribution, the tree is capable of withstanding wide range of climatic conditions. It is occasionally planted for ornament and makes a handsome avenue and shade tree. The tree is cultivated in the arid, semiarid and semi moist areas. Due to its fast growth and multiple uses, it is emerging as a potential tree for growing under agro-forestry plantation in the North-Western states of India. The tree finds suitability in agro-forestry systems to increase fodder and fuel-wood production by utilizing on the bunds of rice fields, farm boundaries, and marginal land. In recent times, private plantations of <i>Melia dubia</i> are becoming more common in the regions upto the altitude of 1000 m to meet the ever growing demands of raw material in paper/pulp and veneer industry. The tree is good weed suppressor with rapid growth and produces easily worked timber. The wood is used for packing cases, cigar boxes, ceiling planks, building purposes, agricultural implements, pencils, match boxes, splints and catamarans. It is suitable for musical instruments, tea boxes and ply-board. It is therefore obvious that research on <i>M. dubia</i> has gained impetus and has become popular among the farmers. However, it is still needs to be evaluated for varying planting densities to optimize growth and productivity for optimizing maximum returns. Planting density selection has important bearing on development, growth and productivity of any tree species which influence rotation length, establishment costs, management and dimensions of output harvested. Therefore, it is imperative to assess biomass and volume accumulation and productivity of tree species under different spatial configurations/tree densities. Since, <i>M. dubia</i> is harvested at 4 to 5 years for paper-pulp and at the same age if it has attained minimum diameter (log mid diameter) of 10 cm. Hence, the present study is intended to estimate growth and productivity of <i>M. dubia</i> in varying spatial configurations/tree densities.</p>		
	Hypothesis		Present study is intended with the null hypothesis (H <sub>0</sub> ) assuming that spatial configuration would not affect the growth performance of <i>M. dubia</i>
05.	Objectives	:	1. To study the productivity of <i>M. dubia</i> in different spatial geometries
06.	Principal investigator and associates	:	<b>PI:</b> Dr. N S Thakur <b>Co-PI:</b> Dr. R P Gunaga Dr. R S Chauhan <b>Associates:</b> Dr. S K Sinha
	SRFs	:	D C Bhuva
07.	Location and Agro-climatic sub-region	:	Dept. of SAF, College of Forestry, 4 <sup>th</sup> class quarters farm, NAU, Navsari
08.	Year of commencement	:	2025
09.	Tree species	:	<i>M. dubia</i> (1 year old plantations)
10.	Experimental details	:	

	(a) Treatments	:	Treatments (Spacing) T <sub>1</sub> = 3×3 m T <sub>2</sub> = 4×3 m T <sub>3</sub> = 4×4 m T <sub>4</sub> = 4×2 m T <sub>5</sub> = 3×2 m
	(b) Experimental Design	:	Large plot technique and CRD shall be used for statistical analysis
	(c) Repetition	:	3 (6 trees/repetition)
	(d) Plot size (if applicable)	:	NA
	(e) Spacing	:	As per treatment detail
	(f) Seed rate (kg/ha)	:	NA
	(g) Manures and fertilizer	:	NA
	(h) Any other detail, if required	:	NA
11.	Observations to be recorded	:	<b>A. Growth attributes</b> Height (m) DBH (cm) Clear bole height (m) <b>B. Productivity attributes</b> Biomass (Kg/tree & tonne/ha/year) Volume (m <sup>3</sup> /tree & per ha/year) <b>C. Ancillary data</b> Rainfall (mm) Temperature (°C)
12.	Methodology	:	<i>M. dubia</i> plantations established in 2023 at different spacings (as per treatment detail above) shall used for the present investigation.

