

NEW TECHNICAL PROGRAMME

Department of Forest Biology and Tree Improvement

Experiment No. 21.5.3.8

01.	Experiment No. and Title	:	Clonal variation for wood mechanical strength properties in selected hybrid <i>Casuarina</i> clones
02.	Budget Head	:	12952
03.	Collaborative department, if any	:	-
04.	Background information		
	<p>The Indian Council of Forestry Research and Education, Dehradun (ICFRE) has taken up an All India Coordinated Research Project (AICRP) to develop new planting materials of higher productivity. Under this programme planting material of various industrial tree species have been developed by the ICFRE institutes. Considering the genetic diversity and suitability for industrial use, The Institute of Forest Genetics and Tree Breeding (IFGTB), Coimbatore has initiated tree improvement work in <i>Casuarina</i>. IFGTB has developed hybrid <i>Casuarina</i> clones which are being tested by various ICFRE institutes and State Agricultural Universities including College of Forestry, NAU, Navsari. A clonal evaluation trial comprising of 11 <i>Casuarina</i> clones was established at FBTI Block, Forestry Farm, NAU, Navsari during October 2020. After four year of growth analysis, four hybrid <i>Casuarina</i> clones viz., IFGTB-CH-5, IFGTB-CH-2, IFGTB-CH-1 and IFGTB-CH-4 have been shortlisted for superior growth performance. These four superior hybrid clones are further selected for testing the wood physical and mechanical properties. Such testing is very important before putting the clones for specific end use. Accordingly, an investigation entitled '<i>Clonal variation for wood mechanical and strength properties in selected hybrid Casuarina clones</i>' is proposed with following objective-</p>		
	Hypothesis		There is no variation among the clones for wood mechanical strength properties
05.	Objectives	:	To study the clonal variation for wood mechanical strength properties in selected hybrid <i>Casuarina</i> clones
06.	Principal investigator and associates	:	<p>PI: Dr. S.A. Huse, Associate Professor (Tree Improvement)</p> <p>Co-PI: Dr. S. K. Sinha, Associate Professor (WST) Dr. L.K. Behera, Associate Professor (Silviculture)</p> <p>Associate scientist: Dr. R.P. Gunaga, Professor (Forest Biology/ Agroforestry)</p>
07.	Location and Agro-climatic sub-region	:	South Gujarat (Heavy rainfall zone, AES-III)
08.	Year and Season	:	Commencement Year: 2025-26
09.	Crop and Variety	:	Hybrid <i>Casuarina</i> Clones

10.	Experimental details	:	
	(a) Treatments	:	Hybrid <i>Casuarina</i> Clones 1. IFGTB-CH-5 2. IFGTB-CH-2 3. IFGTB-CH-1 4. IFGTB-CH-4
	(b) Experimental Design	:	CRD
	(c) Replications/repetition	:	4
	(d) Plot size (if applicable)	:	Gross - _____ m x _____ m
		:	Net - _____ m x _____ m
	(e) Spacing	:	NA
	(f) Seed rate (kg/ha)	:	NA
	(g) Manures and fertilizer	:	NA
	(h) Any other detail, if required	:	NA
11.	Observations to be recorded	:	<ul style="list-style-type: none"> ➤ Physical Properties <ul style="list-style-type: none"> 1. Basic density (g.cm^{-3}) 2. Moisture content (%) ➤ Wood strength/mechanical properties <ul style="list-style-type: none"> 1. Static bending strength <ul style="list-style-type: none"> • modulus of rupture (MoR; kg cm^{-2}) • modulus of elasticity (MoE; kg cm^{-2}) 2. Compressive strength (MCS; kg cm^{-2}) 3. Tensile strength parallel to grain (TS at ML in kgcm^{-2}) ➤ Other parameters <ul style="list-style-type: none"> 1. Wood per cent 2. Bark per cent
13.	Methodology	:	<p>Sample trees will be selected from the existing AICRP <i>Casuarina</i> clonal evaluation trial at NAU, Navsari.</p> <p>Sample trees for the study will be felled and wood samples of 45 cm length will be extracted from 1m, 3m and 6m height of the trunk.</p> <p>Test specimens will be prepared as per approved standards.</p> <p>Mechanical strength tests will be undertaken using the UTM machine available at Tree Improvement Laboratory, College of Forestry, Navsari.</p> <p>Other parameters will be recorded as per the standard procedure.</p>