

# DEPARTMENT OF FOREST PRODUCTS AND UTILISATION



**COLLEGE OF FORESTRY**  
(ASPEE College of Horticulture and Forestry)  
Navsari Agricultural University, Navsari



## ACTIVITIES AND ACHIEVEMENTS

### OBJECTIVES

- Under Graduate and Post Graduate Teaching in the field of **Forest Products and utilization**
- Ad-hoc Research and PG Research related to **Forest Products and Utilisation**
- Extension activities related **Forest Products and Utilisation**

### THRUST AREAS

- Characterization of anatomical features for wood identification of timber species of Gujarat
- Development of dendro-chronological database for timber species of Gujarat
- Study and research on wood science and technological aspects for various end-uses
- Characterization of genotypes of different tree species for wood properties
- Domestication and commercialization of important NWFPs and MAPs
- Propagation techniques for important NWFPs and MAPs
- Cultivation /plantation techniques for important NWFPs and MAPs
- Sustainable harvesting techniques for important NWFPs including MAPs
- Processing, value addition and marketing of important NWFPs including MAPs
- Valuation and certification of forest and forest products
- Quantification and utilization of biofuel from TBOs
- Development of commercial apiculture models
- Development of ethno-botanical database for south Gujarat region
- Development of digital herbaria for the plants of south Gujarat

## ACTIVITIES CARRIED OUT

- Under graduate and post graduate teaching in the field of Forest Products Utilization
- Offering PG programme in M.Sc. Forestry (Wood Science and Technology) and M.Sc. Forestry (Medicinal and Aromatic Plants)
- Offering ELP (Experiential Learning Programme) on Commercial Apiculture for VII<sup>th</sup> semester of B.Sc. (Hons.) Forestry
- Research activities in Wood Science and Technology in Timber yielding species; Dendroclimatological studies; Utilization of Non-timber forest products; Medicinal and Aromatic Plants; Trading of wood and forest Products; Biofuel.
- Transfer of technologies to farmers related to wood identification, tree age determination, wood quality assessment, commercial apiculture, cultivation of medicinal and aromatic plants

## COURSES OFFERED AT UG LEVEL

Course Number	Title of Course	Credits	Name of the course teacher
FPU.3.1	Wood anatomy	2 (1+1)	Mr. S.K. Sinha
FPU.3.2	Logging and ergonomics	2 (1+1)	Mr. H.T. Hegde
FPU.4.1	Wood products and utilization	2 (1+1)	Mr. A.A. Mehta
FPU.4.2/4.4	Wood science & technology	3 (2+1)	Mr. S.K. Sinha
FPU.5.1	Ethnobotany	3 (2+1)	Mr. Jayesh Pathak
FPU.6.1	Utilization of non-timber forest products	3 (2+1)	Mr. A.A. Mehta
FPU.6.2	Medicinal and Aromatic Plants	3 (2+1)	Dr. B.S. Desai
FWE 7.2	Commercial Apiculture	10 (0+10)	Mr. A.A. Mehta Mr. H.T. Hegde Mr. S.K. Sinha Mr. L.K. Behera Dr. H.V. Pandya

## COURSES OFFERED AT PG LEVEL

Course Number	Title of Course	Credits	Name of the course teacher
FOR 504	Forest Products - Chemistry and Industries	2+1	Mr. S.K. Sinha
FOR 603	Advances in Wood and Non-Wood Forest Products	3+0	Dr. M.J. Dobriyal
MAP 521	Basics of Plant Production and Breeding Techniques	2+1	Dr. R.P. Gunaga
MAP 522	Medicinal Chemistry and Processing of MAPs	2+1	Dr. B.M. Desai
MAP 523	Biotechnological Approaches and Agrotechniques for MAP species	2+1	Dr. N.S. Thakur/ Dr. S.K. Jha
MAP 524	Improvement of Medicinal and Aromatic Plants	1+1	Dr. S.K. Jha
MAP 525	Role of Medicinal and Aromatic Plants in Health Care Systems	2+0	Dr. B.S. Desai
MAP 526	Study Tour	0+1	Dr. B.S. Desai
MAP 527	Pharmacognosy of MAPs	1+1	Dr. B.S. Desai
WST 521	Wood Identification	0+2	Mr. S. K. Sinha
WST 522	Wood Chemistry	1+1	-
WST 523	General Properties of Wood	1+1	Mr. S.K. Sinha
WST 525	Paper & Pulp Technology	2+1	-
WST 524	Wood Seasoning and Preservation	2+1	-
WST 526	Wood Modification and Composite Wood	2+1	-

## PG Programme offering in the department

01	M.Sc. (Forestry) in Medicinal and Aromatic Plants
02	M.Sc. (Forestry) in Wood Science and Technology

## ACHIEVEMENTS

### I. Departmental Laboratory and Facilities created

<ul style="list-style-type: none"> <li>• <b>Development of laboratory</b></li> </ul>	<ul style="list-style-type: none"> <li>: 1. Wood anatomy Lab</li> <li>2. Forest Products Lab</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Facilities created</b></li> </ul>	<ul style="list-style-type: none"> <li>: 1. College Museum</li> <li>2. Medicinal Plant Nursery</li> <li>3. Honey Processing Unit</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Instruments/ Equipments available</b></li> </ul>	<ul style="list-style-type: none"> <li>: HPLC, Trinocular compound microscope, Stereo-zoom microscope, Bomb calorimeter, Increment borer, Bark gauge, Dendrometer, Mini band saw, Surface cum thickness planer machine, Modified Boucherie Treatment Unit, Surface cum thickness planner, Wood moister meter, Sliding Microtome, Automatic Knife Sharpener, Willey grinder, Hot air oven, Chain type tenoning machine, Power chain saw, Oil expeller machine, Deep freezer, Honey processing machine and accessories, Honey extractor, Refractometer,</li> </ul>

### II. Research Activities

#### a. Completed Research Projects:

Name of the project and funding agency	Name of Co-PI
1. Forest Resource Survey of <b>Vyara</b> Forest Division (Funded by Gujarat Forest Department)	Mr. S. K. Sinha
2. Forest Resource Survey of <b>Valsad</b> Forest Division (Funded by Gujarat Forest Department)	Mr. H.T. Hegde

#### b. Ongoing Ad-hoc Research Projects:

Name of the project and funding agency	Name of PI/ Co-PI
1. Determination of carbon sequestration potential of forest tree species of Southern Gujarat: Implication for climate change mitigation (Plan project, GoG)	Dr. R.P. Gunaga Mr. S. K. Sinha
2. Development of Bamboo resource Centre (Plan project, GoG)	Mr. S. K. Sinha
3. Investigations on non-timber forest products of Gujarat (ICFRE, Dehradun)	Mr. A.A. Mehta Mr. S.K. Sinha
4. Commercial apiculture (ICAR, New Delhi)	Mr. A.A. Mehta Mr. S.K. Sinha Mr. H.T. Hegde

### c. Ongoing Departmental Research:

Name of departmental projects	PI/ Co-PI
1. Investigations on tree-ring analysis (Dendrochronology) to monitor radial growth responses of teak ( <i>Tectona grandis</i> L.) to climate in South Gujarat	Mr. S.K. Sinha Mr. A.A. Mehta
2. Influence of climate on the wood production and anatomical variations in trees	Mr. S.K. Sinha
3. Potential and prospects of Minor Forest Products in Dangs of South Gujarat	A.A. Mehta Mr. S.K. Sinha
4. Selection of <i>Terminalia chebula</i> for higher tannin content	Mr. H.T. Hegde
5. Study of carbon sequestration potential of important tree species	Mr. S. K. Sinha Mr. A.A. Mehta Dr. R.P Gunaga
6. Sustainable bark harvesting techniques in <i>Terminalia arjuna</i>	Dr. R.P Gunaga Mr. A.A. Mehta Mr. S.K. Sinha
7. Evaluation of Eucalyptus clones for growth and biomass	Mr. S.K. Sinha
8. Effect of Gibberellic acid (GA <sub>3</sub> ) and nitrogen on the growth of <i>Tectona grandis</i> L. for production of stumps for planting	Mr. S. K. Sinha Mr. A.A. Mehta
9. Molecular diversity assessment in geographical collection of Eucalyptus germplasm using DNA based marker system	Mr. S.K. Sinha
10. Value addition of the fruits and Neera of Palmyra palm ( <i>Borassus flabellifer</i> L.)-	Mr. A.A. Mehta
11. Provenance variation for early growth and biomass in <i>Nothapodytes nimmoniana</i> in southern Gujarat	Dr. R.P Gunaga Mr. H.T. Hegde
12. Agroforestry and progeny trials of <i>Melia composita</i> Willd.	Mr. H.T. Hegde
13. Reducing harvesting age of <i>Terminalia chebula</i> and <i>T. bellerica</i> (chebulic and belleric myrobalans)- for early returns	Mr. H.T. Hegde
14. Influence of weather parameters on foraging activity of stingless bees ( <i>Tetragonula iridipennis</i> Smith) near the nests	Mr. A.A. Mehta Mr. S.K. Sinha R.P. Gunaga
15. Nesting habitat and nest architecture of stingless bees ( <i>Tetragonula iridipennis</i> Smith) in South Gujarat condition	Mr. A.A. Mehta Mr. S.K. Sinha R.P. Gunaga
16. Domestication of stingless bees ( <i>Tetragonula iridipennis</i> Smith).	A.A. Mehta S.K. Sinha R.P Gunaga

## Recommendation/research concluded

Thakur, NS, SK Jha, **HT Hegde**, SK Attar, **AA Mehta** (2015) Effect of spacing and training system on productivity, and protein and L-DOPA content of white seeded velvet bean [*Mucuna pruriens* (L.) DC.] in South Gujarat.

**Recommendation:** For higher L-DOPA (L-3, 4-dihydroxyphenylalanine) it is advisable to collect *Mucuna* from Valsad, Chikhali, Budhakeshwar village (Navsari Mahuva road), Bardoli and Vyara. Breeders willing to enhance L-DOPA content in *Mucuna pruriens* may incorporate accessions namely 29, 10, 14 and 13 in breeding stock.

## DEPARTMENTAL PUBLICATIONS

<b>Research Paper</b>	<ol style="list-style-type: none"> <li>1. <b>Sinha, S.K.</b>, Deepak, M.S. and Rao, R.V. 2010. Wound response in teak trees from Western Ghats of India and its potential in dendroecology. <i>The Indian Forester</i>, <b>136</b>(5) 661-666.</li> <li>2. Deepak, M.S., <b>Sinha, S.K.</b> and Rao, R.V. 2010. Tree-ring analysis of teak (<i>Tectona grandis</i> L. f.) from Western Ghats of India as a tool to determine drought years. <i>Emirate Journal of Food and Agriculture</i>, <b>22</b>(5) 326-339.</li> <li>3. Behera, L.K., Mehta, A.A. and <b>Sinha, S.K.</b> 2014. Suitable bee flora availability for commercial apiculture during dearth period in the heavy rainfall zone of South Gujarat. <i>Research Journal of Chemistry and Environmental Sciences</i>, <b>2</b>(6):65-68.</li> </ol>
<b>Research Note/Review Articles</b>	<ol style="list-style-type: none"> <li>1. Behera, L.K., Nayak, M.R., Patel, D., <b>Mehta, A., Sinha, S.K.</b> and <b>Gunaga, R.</b> 2015. Agroforestry practices for physiological amelioration of salt affected soils. <i>Journal of Plant Stress Physiology</i>, Vol. 1 (1):13-18.</li> <li>2. <b>Hegde, H.T.</b>, Samom, K. S., Hegde, N., Thakur, N.S. and Jha S.K. 2011. People's Participation in Forest Management. <i>The Indian Forester</i>: 137(8a): 70-75.</li> <li>3. Jha S.K., <b>Hegde, H.T.</b> and Thakur, N.S. 2011. Community Forestry; A Viable option for Forest Management. <i>The Indian Forester</i>: 137(8 a): 100 - 104.</li> </ol>
<b>Chapters in Book/ Proceedings</b>	<ol style="list-style-type: none"> <li>1. Kumar, V., <b>Sinha, S.K.</b> and <b>Mehta, A.A.</b> (2014). <i>Non-timber Forest Products. In: A question Bank of Forestry</i>, V. Kumar and T.K. Kunhamu (Eds.), Narendra Publishing House, New Delhi, India. Pp. 249-296.</li> <li>2. Kumar, V., <b>Sinha, S.K.</b>, Huse, S.A. and <b>Gunaga, R.P.</b> (2014). <i>Introduction. In: A question Bank of Forestry</i>, V. Kumar and T.K. Kunhamu (Eds.), Narendra Publishing House, New Delhi, India. Pp. 1-30.</li> <li>3. <b>Sinha, S.K.</b>, Anoop, E.V. and Kumar, V. (2014). <i>Major Forest Products In: A question Bank of Forestry</i>, V. Kumar and T.K. Kunhamu (Eds.), Narendra Publishing House, New Delhi, India. Pp. 249-296.</li> </ol>

<b>Practical Manual/ Lecture Notes</b>	<ol style="list-style-type: none"><li>1. <b>H.T. Hegde, S.K. Sinha and N.S. Patil</b> (2012) Practical manual on Logging and Ergonomics.</li><li>2. <b>S.K. Sinha, H.T. Hegde and N.S. Patil</b> (2012) Practical manual on Wood Anatomy.</li><li>3. <b>A.A. Mehta</b>, L.K. Behera, M.B. Tandel and <b>R.P. Gunaga</b> (2014) Practical manual on Utilization of Non-timber Forest Products.</li><li>4. <b>A.A. Mehta</b>, L.K. Behera, <b>S.K. Sinha</b>, and <b>R.P. Gunaga</b> (2014) Practical Manual on Wood Products and Utilization.</li><li>5. N.S. Thakur, B.S. Desai, B.V. Padhiar and N.L. Patel (2013). Medicinal and Aromatic Plants practical Manual.</li></ol>
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