Curriculum Vitae

Dr. A. Nicodemus

1. Personal Information

Date of Birth: 15.08.1967
Address: (Office) PB 1061, IFGTB, Forest Campus, Coimbatore 641 002, Tamil Nadu
Telephone: 0422-2484194, 2484100
Mobile: 9442559070
Email: nico@icfre.org
Web: http://ifgtb.icfre.gov.in

2. Current Employment

Scientist 'G'
Institute of Forest Genetics and Tree Breeding
Indian Council of Forestry Research and Education
Coimbatore 641 002, Tamil Nadu.

3. Employment History

Period	Designation	Organization
2016-2020	Scientist 'F''	Institute of Forest Genetics and Tree Breeding Indian Council of Forestry Research and Education Coimbatore 641 002, Tamil Nadu.
2011-2015	Scientist 'E'	
2006-2010	Scientist 'D'	
2002-2005	Scientist 'C'	
1997-2001	Scientist 'B'	
1990-1997	Research Assistant	

4. Education

Period	Degree	Institution	Class
1999-2005	Ph.D. (Botany)	Bharathiar University Coimbatore, TN	Highly commended
1985-1990	M.Sc. (Botany)	University of Madras, Chennai	First Class with Distinction
1985-1988	B.Sc. (Botany)	University of Madras, Chennai	First Class with Distinction

5. Professional Training

Period	Subject	Institution	Type of Course
1995	Molecular Genetics	Oxford Forestry Institute, Department of Plant Sciences, University of Oxford, UK	Short-term Training Course
1999	Forestry	State Forest Service College, Coimbatore	Orientation course in Forestry
2009	Advanced Tree Breeding	Australian Tree Seed Centre, CSIRO, Australia	Visiting Faculty

6. International Position Held

Period	Position	Organization
2014 – Till date	**Coordinator** Working Party 2.08.02 Improvement and Culture of Nitrogen Fixing Trees	International Union of Forestry Research Organizations

7. National and Institutional Positions Held

Period	Position	Responsibilities
2020 – Till date	National Project Coordinator – AICRP 1	Coordinating research activities on Casuarina improvement with seven ICFRE Institutes and two State Agricultural Universities for implementation in 14 States.
2019-20	National Subject Matter Coordinator – Productivity Enhancement	Coordinated with Nodal Officers from all ICFRE Institutes and other contributors from different organizations, compiled all recent information on productivity enhancement for publication by ICFRE as a User Manual.
2015 – Till date	Member-Secretary Regional Variety Testing Committee - IFGTB	Conducted RVTC meeting in IFGTB to recommend six new varieties for approval of Variety Releasing Committee for release in 2017. Completed technical evaluation process for release of two Eucalyptus hybrid clones and six Calophyllum clones from IFGTB in 2020.
2015 – Till date	Head, Division of Genetics and Tree Improvement, IFGTB	Heading the core research discipline of IFGTB which has five Scientists, six research staff and 15 research scholars. Harmonizing tree improvement activities across species and other disciplines in IFGTB. Providing technical support to Director and Group Coordinator (Research).

8. Research Areas

- Forest genetics and tree breeding
- Breeding for growth, pulp and timber traits
- Varietal development for large scale commercial planting
- Assessment and conservation of forest genetic resources

9. Professional Work

Increasing the productivity of forest plantation species has been the focus of research and development activities taken up during the past three decades.

<u>Advance Generation Breeding</u>

Advanced the Casuarina breeding programme to the third generation after continuous implementation from 1996. Second generation breeding populations were converted into seeding seed orchards through selection and thinning. Seeds collected and supplied to farmers and third generation breeding populations established. The average productivity of plantations raised with

these seeds increased from 24 tonnes of wood per ha per year to 30 tonnes per ha per year recording a genetic gain of 20%.

Developed a revised breeding programme for Casuarina for the next 20 years (2018-37) as a sequel to the first programme implemented during 1996-2017. With the approval from Director General, ICFRE the revised programme was written in technical collaboration with Scientists of Australian Tree Seed Centre, CSIRO. This documentation makes the Casuarina breeding programme one of the very few written programmes for a period of over 40 years.

Development and Release of New Varieties

Released 11 new varieties of *Casuarina equisetifolia* and *C.* and their hybrid combinations for fast growth, stem straightness, high pulp yield, drought tolerance and adventitious rooting through the Variety Releasing Committee of ICFRE and registered with the Protection of Plant Varieties and Farmers Rights Authority. These clones have a high productivity of 45 tonnes pulpwood per ha per year recording a genetic gain of 50% over seedlings. A second batch of 25 clones is currently under multilocation testing. Developed 25 clones *Leucaena leucocephala* for fast growth, axis persistence, stem straightness, high pulp yield and low fecundity and deployed in multilocation testing.

In collaboration with the Australian Tree Seed Centre, CSIRO, Canberra introduced a new set of Eucalyptus species commonly called as 'mallees' which are highly adapted to arid and semi-arid conditions. Selected *E. polybractea* for high oil content and *E. herbartiana* and *E. gillineii* for wood production through multilocation testing in low-rainfall areas.

Commercialization of New Varieties

In order to meet the challenge of making the new high-yielding varieties accessible and affordable to a large number of farmers and other tree growers, partnerships have been established with wood-based industries and private nurseries for mass multiplication and supply of superior planting material. Backed by IPR protection obtained through registration under PPVFR Act, 2001, non-exclusive licenses have been granted to seven paper industries and nurseries for commercial use of the clones against payment of Rs.33,00,000/- as one-time license fee.

The licensees have produced and supplied around 70 million plants during 2015-19 and planted in about 50,000 ha. With the popularity of the clones increasing, the cultivation area is expected to double during the next three years. It is estimated that farmers could get an additional income of around Rs. 51.2 crores from the 6,400 ha harvested during 2018-19 due to increased productivity of the genetically superior clones.

Developed guidelines for DUS testing (Distinctiveness, Uniformity and Stability) under the provisions of Protection of Plant Varieties and Farmers Rights Act, 2001 to facilitate registration of Casuarina varieties for granting legal ownership. As a first instance in forestry sector, the Protection of Plant Varieties and Farmers Rights Authority, Govt. of India has notified IFGTB, Coimbatore as a DUS Centre for Casuarina under the Act to conduct DUS tests for applications received for registration of varieties.

10. Industrial Consultancies

Period	Industry	Consultancy
2018 – Till date	Andhra Paper Limited Rajahmundry, Andhra Pradesh	Developing High Yielding Clones and Breeding Orchards of Casuarina and Leucaena to Increase Plantation Productivity in Andhra Pradesh
2019 – Till date	Seshasayee Paper and Boards Limited, Erode, Tamil Nadu	Developing Clonal Seed Orchard of *Casuarina equisetifolia* to Produce Genetically Improved Seeds for the Farm Forestry Programmes
2012-16	BILT Tree Tech Limited Gurgaon	Establishing Seed Orchards of Casuarina

11. Awards Received

- 1999- ICFRE Award for Excellence in Forestry Research
- 2005- Indian Forester Award for the Best Research Note published in the Journal *The Indian Forester*

12. Selected Publications

Nicodemus, A. (National Subject Matter Coordinator) 2020. ICFRE User Manual - 01 Productivity Enhancement in Forestry Plantations. Indian Council of Forestry Research and Eduation, Dehra Dun.

Nicodemus, A., 2017. Casuarina as a Cash Crop: A Guide for Cultivation. 30p. *IFGTB Money-spinning Trees Series.* Institute of Forest Genetics and Tree Breeding, Coimbatore.

Nicodemus, A., A. Pauldasan, P. Vipin, J. Soosairaj, A. Durai and B. Gurudev Singh, 2015. Species-provenance variation in growth, stem form and wood traits of Casuarina. Indian Forester, 141(2):203-210.

Nicodemus, A. V. Sivakumar, A. Mayavel, S. Murugesan and M. Gera. 2019. Casuarina hybrid clones for boosting farmers' income. IFGTB News, 1(1):02-03.

Nicodemus, A., 2019. Green economy and environmental sustainability of Casuarina plantations. IUFRO News, 48 (11 & 12). P.2.

Nicodemus, A., Pinyopusarerk, K., Zhong, C.L., Franche, C. (Editors). 2016. Casuarina improvement for securing rural livelihoods. Proceedings of Fifth International Casuarina Workshop. Institute of Forest Genetics and Tree Breeding, Coimbatore.

Mayavel A., Muthuraj K., Iswarya S., Nicodemus A. and Sivaraman K. 2018. Phytochemical and antioxidant potential of *Gmelina arborea* Roxb. from different agroclimatic region of Tamil Nadu and Kerala. European Journal of Pharmaceutical and Medical Research, 5(11), 359-363.

Yasodha, R., Vasudeva, R., Balakrishnan, S., Sakthi, A.R., Nicodemus, A., Nagarajan, B., Rajashekar, B., Bachpai, V.K.W., Pillai, C. and Suma Arun Dev, S.A. 2018. Draft genome of a high value

tropical timber tree, Teak (*Tectona grandis* L. f.): insights into SSR diversity, phylogeny and conservation. *DNA Research,* Volume 25, Issue 4, Pages 409–419.

Chandrasekar, R., A.Vinothkumar, Smitha G. Nair, V.Sivakumar and A. Nicodemus. 2017. Additive Main Effects and Multiplicative Interactions (AMMI) Analysis of Growth of Half-sib Families of *Eucalyptus camaldulensis* Across Environments. Madras Agric. J., 104 (4-6): 197-202.

Durai, A., Nicodemus, A. and Singh, B.G. 2015. Screening of Leucaena germplasm for high pulp wood and low seed production in India. NFT News, 12(1):8-9.

Nicodemus, A., Warrier, R.R., Pauldasan, A., Sivakumar, V., Anandalakshmi, R. and Gurudev Singh, B., 2013. DUS test guidelines for Casuarina (*Casuarina equisetifolia* L. and *C. junghuhniana* Miq.). Plant Variety Journal of India, 7(2): 57-70.

Warrier, R.R., P. Priyadharshini, S. Senthilvadivu, B. Devika Nagalakshmi, C. Savitha, R. Anandalakshmi, A. Nicodemus and B. Gurudev Singh. 2010. Isozyme polymorphism to detect genetic diversity of *Jatropha curcas* L. in India. Annals of Tropical Research, 32(1):92-111.

Sivakumar, V., Anandalakshmi, R. Nicodemus, A., Warrier, R.R., Chandrasekar, R. and Gurudev Singh, B., 2013. DUS test guidelines for Eucalyptus (*Eucalyptus camaldulensis* Dehnh. and *E. tereticornis* Sm.). Plant Variety Journal of India, 7(2): 29-42.

Nicodemus, A**.,** Varghese, M. Nagarajan, B. and Lindgren, D. 2009. Annual fertility variation in clonal seed orchards of teak (*Tectona grandis* L.f.) and its impact on seed crop. Silvae Genetica, 58(1-2):85-93.

Varghese, M., R. Kamalakannan, A. Nicodemus, and D. Lindgren, 2008. Fertility variation and its impact on seed crops in seed production areas and a natural stand of teak in southern India. Euphytica 160:131-141.

Nagarajan, B., Nicodemus, A., Sivakumar, V., Mandal, A.K., Kumaravelu, G., Jayaraj, R.S.C., Narmatha Bai, V. and Kamalakannan, R. 2006. Phenology and control pollination studies in *Casuarina equisetifolia* Forst. Silvae Genetica 55(4-5):149-155.

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Nicodemus, A. 2007. Genetic improvement of *Casuarina equisetifolia* through selection and breeding. ENVIS Forestry Bulletin, 7(1):91-99.

Nagarajan, B. Nicodemus, A. Kala, N. Mayavel, A. Sophia, P. Pandiarajan, C. and Krishnamurthy, M. 2007. Reproduction in Padauk (*Pterocarpus dalbergioides* Roxb.): Approaches for domestication and conservation of genetic resources. ENVIS Forestry Bulletin, 7(1):105-111.

Warrier, R.R. Anandalakshmi, R. Devika Nagalakshmi, B. Savitha, C. Nicodemus, A. and Gurudev Singh, B. 2009. A simple and rapid method for isolation of high quality genomic DNA from the biofuel plant – *Jatropha curcas* L. The ICFAI University Journal of Life Sciences, 3(4): 28-37.

Nicodemus, A., J.P. Jacob and B. Nagarajan, 2005. Pollination by nectarivorous birds in teak clonal seed orchards. Indian Forester, 131:1613-1616

Nicodemus A, Nagarajan B, Narayanan C, Varghese M, Subramanian K. 2005. Genetic Variation in Indian Teak (*Tectona grandis* L. f.) Populations Assayed through RAPD Markers. Indian Forester, 131:1121-1131.

Narayanan, C. and A. Nicodemus, 2005. Incidence of wilt (blister-bark) disease of *Casuarina junghuhniana* in India. Indian Forester, 131:257-258.

Sasidharan, K.R., A. Balu, B. Deeparaj and A. Nicodemus, 2005. Screening *Casuarina equisetifolia* provenances against the bark caterpillar, *Indarbela quadrinotata* and possible biochemical factors determining resistance. Journal of Tropical Forest Science, 17:625-630.

Varghese, M., A. Nicodemus and D. Lindgren, 2004. Fertility and Effective Population Size in Seedling Seed Orchards of *Casuarina equisetifolia* and *C. junghuhniana.* Silvae Genetica, 53:164-168.

Nicodemus, A. and J.P.Jacob, 2004. Bird pollinators of teak. Newsletter for Birdwatchers, 44:68-69.

Nicodemus, A., B. Nagarajan and M. Varghese, 2003. Coppicing ability of *Casuarina junghuhniana* Miq. provenances. Myforest, 39(4):359-363.

Varghese, M., A. Nicodemus, P.K. Ramteke, G. Anbazhagi, S.S.R. Bennet and K. Subramanian, 2000. Variation in growth and wood traits among nine populations of teak in Peninsular India. Silvae Genetica, 49:201-205.

Nagarajan, B., A. Nicodemus, A.K. Mandal, R.K. Verma, K. Gireesan and N.P. Mahadevan, 1998. Phenology and controlled pollination studies in Tamarind. Silvae Genetica**,** 47:237-239