

## PROJECTS COMPLETED DURING THE YEAR 2006-2007 (Externally aided)

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### **Project 1: Refinement of protocols for rapid clonal propagation of Sandal and Red sanders; Demonstration of field performance and evaluation of genetic fidelity (Funding Agency: Department of Biotechnology, Govt. of India) [2003-2006]**

**Findings:** Developed refined protocols for in vitro cloning of Santalum album through axillary shoot proliferation and somatic embryogenesis of mature trees and clones. Genotype/clones have shown significant effect on shoot initiation, multiplication and rooting. Five genotypes/clones tested viz; AP4, KL3, CPT6, T1 and T13 and shoot multiplication rate varied from 2.66-4.43 fold and rooting from 40.77-70.39%. Genotypes/clones have also shown variable response on embryogenic callus induction, multiplication, somatic embryo induction, maturation and germination. Five clones viz; KL3, AP4, T11, K31 and K36 tested for somatic embryogenesis. Somatic embryo induction varied from 60.31- 89.65%. Germination percentage varied from 40.42-50.73% with genotypes. Developed process for direct adventitious shoot induction and plantlet development from leaf and internode tissues of mature and selected genotypes for rapid and mass production of planting material of sandal. Basic protocol also developed for in vitro cloning of red sanders.

### **Project 2: Biocomposites from engineered natural fibres (Funding Agency: Ministry of Environment and Forest (MoEF)) [2004-2006]**

**Finding:** Natural fibres are increasingly being used as reinforcement in commercial thermoplastics due to their low cost, high specific properties and renewable nature. The effect of filler concentration on the mechanical properties of wood fibre filled composites, prepared by using m-TMI-g-PP as the compatibilizer, was investigated. Tensile strength of composites so prepared increased by almost 45%, whereas an 85% increase in flexural properties was observed. The addition of wood fibers resulted in a decrease in elongation at break and impact strength of the composites. Dynamic modulus of elasticity (MoE) and shear modulus of wood filled polypropylene composite at various filler contents ranging from 10% to 50% were determined from the vibration frequencies of disc shaped specimens. Between the two fillers, wood fibre filled composites exhibited slightly better properties. Halpin-Tsai model equation was used to describe the changes in the composite modulus with the increasing filler content. The continuous improvement in elastic properties of the composites with the increasing wood filler is attributed to the effective reinforcement of low modulus polypropylene matrix with the high modulus wood filler

### **Project 3: Revision of subfamily Ponerinae (Hymenoptera:Formicidae) in India with special emphasis to western ghats (Funding Agency: DST-Fast Track Scheme) [2004- 2007]**

**Finding:** Out of 64 species of Ponerinae ants known from India, 51 species occur in Western Ghats. One new genus and six new species of Ponerinae ants have been described from Western Ghats.