

Efficacy of Coconut Shell Pyrolytic Oil Distillate in Protecting Wood Against Bio-Deterioration

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Abstract : Coconut trees (*Cocos nucifera* L.) are grown in many parts of India and world because of its multiple utilities. During pyrolysis, coconut shells yield oil, which is a dark thick liquid. Upon simple distillation it produces a more or less colourless liquid, termed coconut shell pyrolytic oil distillate (CSPOD). This manuscript reports and discusses the use of coconut shell pyrolytic oil distillate as a potential wood protectant against bio-deterioration. Since botanical products as ecofriendly wood protectant is being tested worldwide, the utilization of CSPOD as wood protectant is of great importance. The efficacy of CSPOD as wood protectant was evaluated as per Bureau of Indian Standards (BIS) in terms of its antifungal, antiborer, and termiticidal activities. Specimens of Rubber wood (*Hevea brasiliensis*) in six replicate each for two treatment methods namely spraying and dipping (48hrs) were employed. CSPOD was found to impart total protection against termites for six months compared to control under field conditions. For assessing the efficacy of CSPOD against fungi, the treated blocks were subjected to the attack of two white rot fungi *Tyromyces versicolor* (L.) Fr. and *Polyporus sanguineus* (L.) G. Mey and two brown rot fungi, *Polyporus meliae* (Undrew.) Murrill. and *Oligoporus placenta* (Fr.) Gilb. & Ryvarden. Results indicated that treatment with CSPOD significantly protected wood from the damage caused by the decay fungi. Efficacy of CSPOD against wood borer *Lyctus africanus* Lesne was carried out using six pairs of male and female beetles and it gave promising results in protecting the treated wood blocks when compared to control blocks. As far as the treatment methods were concerned, dip treatment was found to be more effective when compared to spraying. The results of the present investigation indicated that CSPOD is a promising botanical compound which has the potential to replace synthetic wood protectants. As coconut shell, pyrolytic oil is a waste byproduct of coconut shell charcoal industry, its utilization as a wood preservative will expand the economic returns from such industries.

Keywords : coconut shell pyrolytic oil distillate, eco-friendly wood protection, termites, wood borers, wood decay fungi

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