

SESSION 4 NEW METHODS AND CHEMICALS FOR WOOD PRESERVATION

TESTING OF NON-DESTRUCTIVE METHODS AND WOOD NATURAL AND CONFERRED DURABILITY FOR DRYWOOD TERMITES DETECTION AND CONTROL

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ABSTRACT

The invasive drywood termite *Cryptotermes brevis* (Walker) was accidentally introduced in the Azores Islands (Portugal), causing severe damage to structural timbers in buildings. Research on efficient monitoring and control methods is crucial to the definition of future integrated pest management strategies and for the preservation of wooden structures in the Azorean Islands.

Blocks of eight wood species (white tola, kambala, sucupira, Norway spruce, redwood, Australian blackwood, blue gum and Japanese cedar) and two wood derived products (oriented strand board - OSB and medium-density fiberboard - MDF) were exposed for two years, to drywood termites, inside a house with an active infestation. One organic solvent (propiconazole: 1.22% + permethrin: 0.24%) was applied to all wood species and OSB; MDF was not submitted to any treatment. Two different methods for organic solvent application were used: by brushing or by immersion. Drywood termites attack was evaluated through the observation of: sealed or no sealed holes in wood or wooden products, pellets or termites presence.

A redundancy analysis was performed and three variables were considered significant: no treatment, OSB and MDF. Generally, non treated blocks of all wood species and OSB were the most consumed. OSB was severely attacked, since it had the higher number of holes, although some were not sealed, indicating possible difficulties in drywood termites' installation. Some variables showed 100% protection against drywood termite attack during the test period: a) organic solvent application (sucupira and white tola); b) organic solvent applied by immersion (Australian blackwood, Norway spruce, Japanese cedar and kambala); c) organic solvent applied by brushing (redwood and blue gum). Untreated kambala and blue gum had the lowest number of holes in the blocks though severe infestation of blue gum sapwood had been found previously on the same building.

Non destructive techniques for termites' detection are very important for early prevention and control measures. A microwave detection device and an acoustic detection device were tested for termites' detection. Microwave detector negative detections were false in half of detections made; positive detections were false in 42% of the cases. For the acoustic detector 15% of negative detections were correct; all positive detections were correct. Acoustic and microwave detection techniques potential in detecting early infestation of *C. brevis* should be further investigated.