

**DIE BACK SYNDROME CAUSED BY *LASIODIPLODIA THEOBROMAE* AND
FUSARIUM PROLIFERATUM IN ELITE GENOTYPES
OF *TECTONA GRANDIS* LF., COSTA RICA**

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Tectona grandis L. (teak) is native to the tropical and subtropical regions of India, Burma, Thailand, and Laos in Asia and it is one of the most important timber species in the tropics because of its economic use. Costa Rica has been a pioneer in teak intensive cultivation, and a regional leader in tree improvement and conservation programs with GENFORES (international tree improvement cooperative). Forest plantation productivity and economical value has risen significantly; however, teak's dieback syndrome in commercial plantations become worst year by year. The main objective of this research is to contribute with the development of prevention options through putative tolerant genotypes utilization, as a transdisciplinary approach between pathology and tree breeding. This research used plant material from GENFORES. Syndromes causal agents were isolated, characterized and identified from five trees (four with symptoms and one healthy) of three different sites. Affected vascular tissue segments were cultivated in potato dextrose agar (PDA) to isolate pure cultures. According to the morphological characteristics, the fungus was identified as *Lasiodiplodia theobromae* and *Fusarium proliferatum*. To confirm the morphological identification, portions of the DNA were sequenced. Later, GENFORES elite genotypes teak were inoculated with *Lasiodiplodia theobromae* and *Fusarium proliferatum* (separated and together) to fulfill Koch's postulates and to screen out potential tolerant clones. Inoculation was carried out on 6 month old teak's clones, by placing 1.5 mm diameter mycelial plugs of the isolates grown on PDA in artificially made wounds (2 cm length) in the vascular cambium tissue. All elite clones displayed symptoms 120 days after inoculations. The fungus was re-isolated from all inoculated plants, fulfilling Koch's postulates. The research continues in order to obtain resistant or tolerant clones.

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