

Physiological Response of Naturally Regenerated *Pinus taeda* L. Saplings to Four Levels of Stem Inoculation with *Leptographium terebrantis*

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Abstract : *Leptographium terebrantis* is an opportunistic root pathogen commonly associated with loblolly pine (*Pinus taeda* L.) stands that are undergoing a loss of vigor in the southeastern US. In order to understand the relationship between *L. terebrantis* inoculum density and host physiology, an artificial inoculation study was conducted in a five-year-old naturally regenerated loblolly pine stand over a 24 week period in a completely randomized design. *L. terebrantis* caused sapwood occlusions that increased in severity as inoculum density increased. The occlusions significantly reduced water transport through the stem but did not interfere with fascicle-level stomatal conductance or induce moisture stress in the saplings. The resilience of stomatal conductance among pathogen-infested saplings is attributed to the growth and hydraulic function of new sapwood that developed after artificial inoculation. Results demonstrate that faster-growing families of loblolly pine may be capable of tolerating the vascular root disease when the formation of new sapwood is supported by sustained crown health.

Keywords : hydraulic conductance, inoculum density, *Leptographium terebrantis*, *Pinus taeda*, sapwood occlusion

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