

**PISOLITHUS TINCTORIUS MYCOBIONT INOCULATIONS AS
A FACTOR IN PERFORMANCE OF CONTAINERIZED AND
BARE-ROOT SHORTLEAF PINE SEEDLINGS ON
LIGNITE MINESOILS IN PANOLA COUNTY, TEXAS**

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The effects of artificial soil infestation with basidiospores and vegetative mycelia of the fungal symbiont Pisolithus tinctorius on ectomycorrhizae development of shortleaf pine (Pinus echinata) seedlings grown in styroblock containers were tested in the greenhouse. These preliminary tests showed that both spores and mycelia will produce satisfactory ectomycorrhizae development. Various methods of inoculation had little effect on growth and development of containerized seedlings or on the accumulation of N, P, K, Ca, Mg, Na, Mn, Zn, or Cu in foliage and lateral roots. The styroblock containerization system used in conjunction with sandy loam soil/vermiculite (2:1 v/v) potting-mix produced excellent quality shortleaf pine seedlings with strong primary and secondary lateral root development.

Ultrastructural examination of inoculated roots revealed that a Basidiomycete and another fungus were mycotrophic, full Hartig-net and mantle development were common, and apparent host and mycobiont physiological activity was positively influenced by intimate symbiotic relationship. Evolution of mycorrhizae progressed from an obvious infection process at the host epidermis and outer cortical cells to a balanced symbiosis in the Hartig-net region of the deep cortex.

The inoculated containerized shortleaf pine seedlings with their far better initial ectomycorrhizae development survived significantly better than 1-0 bare-root nursery-grown seedlings following the first growing season after outplanting on minesoils at the Martin Lake lignite stripmine in Panola County, Texas. Inoculation treatments of bare-root seedlings with P. tinctorius basidiospores and vegetative mycelia at time of planting had no significant effect on survival or growth. After the first growing season, foliar concentrations of N, P, K, Ca, Mg, Na, Mn, Zn, and Cu were little affected by inoculation treatments.

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