

From Forest Nursery Notes, Summer 2009

129. The affect of *Pythium* spp. and cold storage on the survival of longleaf pine seedlings after outplanting. (ABSTRACT). Jackson, D., Enebak, S. A. , and South, D. B. *Phytopathology* 99:S199. 2009.

The affect of *Pythium* spp. and cold storage on the survival of longleaf pine seedlings after outplanting

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Phytopathology 99:S199

Prior to outplanting, cold storage of pine seedlings is a common practice used by managers of southern forest tree nurseries. Occasionally, bareroot seedling survival tends to be less after storage (>1 wk) for seedlings lifted during November to early December than when seedlings are lifted and stored in January. In contrast, survival of container-grown seedlings is not affected when stored at the same period for longer durations. There is some evidence that *Pythium* spp. could be infecting seedling roots through wounds sustained as they are lifted from nursery beds. The combination of the fungus, wounded roots, and the cool, moist environment in cold storage may encourage fungal growth and subsequent outplanting failure. The objective of this research was to examine if the presence of *Pythium* spp. had any effect on seedling survival and physiology after cold storage. Bareroot and container-grown longleaf pine (*Pinus palustris*) seedlings were inoculated with either *P. dimorphum* or *P. irregulare*. To simulate lifting damage, roots of container-grown seedlings in peat moss were either wounded or not wounded. After 12 weeks of storage, bareroot seedling survival was >20% and container seedling survival >70% for non-treated seedlings. Bareroot seedling survival was <5% and container-grown seedling survival >70% when inoculated with either *Pythium* spp. after 12 weeks of storage. To determine the effects of *Pythium* spp. on root growth potential, bareroot longleaf seedlings were inoculated with either *P. dimorphum* or *P. irregulare*, cold stored for 3 wk, and placed in a hydroponic system for 60 d. Root growth potential was not affected by *Pythium* spp., however, inoculation resulted in a reduction in root collar diameter. These results indicate that presence of *Pythium* spp. during cold storage can negatively affect seedling survival and early diameter growth of bareroot longleaf pine seedlings.