

ASSESSING LONG-TERM IMPLICATIONS FOR DISEASE RESISTANCE SCREENING IN  
PINES: GROWTH RESPONSE AND VIRULENCE OF THE PITCH CANKER *FUSARIUM*  
*CIRCINATUM* IN A CHANGING CLIMATE

**Tania Quesada**<sup>1</sup>, Sunny Lucas<sup>2</sup>, Katherine Smith<sup>3</sup>, Kathleen McKeever<sup>2</sup>, Gary Peter<sup>4</sup>, Jason Smith<sup>1</sup>

<sup>1</sup>School of Forest Resources and Conservation, University of Florida, Gainesville, FL; <sup>2</sup>USDA Forest Service, Resistance Screening Center, Asheville, NC; <sup>3</sup>USDA Forest Service, Southern Research Station, Gainesville, FL; <sup>4</sup>School of Forest Resources and Conservation, Genetics Institute, University of Florida, Gainesville, FL

The fungus that causes pitch canker disease, *Fusarium circinatum* has caused recent outbreaks on southeastern U.S. pine plantations. This has resulted in significant economic losses to the timber industry. The intensification of these outbreaks is unknown but may be related to changes in climate. As our climate continues to warm, it is important to anticipate the effects of this disease under future environmental conditions and to develop strategies for obtaining trees resistant to current and future variants of *F. circinatum*. We tested fifteen *F. circinatum* isolates collected from Florida and Georgia and evaluated their growth response in culture at 25, 28, and 31°C. We also evaluated the sporulation and pathogenicity of a subset of these isolates on loblolly (*Pinus taeda*) and slash pine (*Pinus elliottii*) open-pollinated families at the USDA Forest Service Resistance Screening Center (RSC). Our results showed overall slower mycelium growth at 31°C, although a small number of isolates showed no significant growth between 25°C and 28°C. These isolates could potentially be better adapted to warmer climate conditions and need further assessment. Furthermore, some of the newly-collected isolates showed higher virulence than those routinely used at the RSC for screening. The RSC is a public institution created to screen seedlings of pine and other tree species for genetically-controlled tolerance to different diseases, including pitch canker and provides services to numerous private and public institutions for over 40 years. As a result of this study, the RSC is now using these new *F. circinatum* isolates in their operational screening program. We are now working together to develop a long-term plan to include material from the entire geographic range of loblolly and slash pine and to periodically renew the pathogen collection used in the RSC's screening tests.