Field Evaluation of Fertilizer Effects on Pitch Canker Severity in Slash Pine Families

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Pitch canker is an episodic disease of southern pines, caused by the fungus *Fusarium circinatum*. Commercial pine stands are routinely fertilized after planting and at age 5 to enhance biomass production; however, while pine breeding programs have led to increased growth efficiency in the past decades, fertilizer rates have not changed much. Reports of fertilizer applications exacerbating pitch canker severity have been mainly anecdotal and from controlled greenhouse experiments. We set up two field trials near the towns of Brooker and Hampton, Florida, located 8 miles apart. Each site consisted of three-year-old slash pines from "resistant" (Brooker) and "susceptible" (Hampton) seedlots set in a randomized complete block design with four replicates and three treatments: Control (no fertilizer), low (200 lbs/acre DAP), and high (200 lbs/ac DAP + 237 lbs/ac of urea) fertilizer rates, applied in July 2022. Each plot consisted of 28 trees, of which 10 were inoculated in April 2023 with a local isolated of *F. circinatum* obtained from the Hampton site. Trees were evaluated for symptom severity (branch browning and resin production) at 7 weeks post inoculation. Preliminary results show greater occurrence of severe browning (75%-100% brown needles) and high resin production (large amounts of resin dripping onto branches or ground below) in plots with high fertilizer rates, compared to low fertilizer and controls. This inoculation will be repeated in 2024 on an alternate subset of 10 trees within those same plots. In addition, two more field trials were selected this year near Fargo, Georgia, using the same design and fertilizer treatments as the Florida trials. Fertilizer treatments were applied in March 2023 and inoculations with a local "Fargo" isolate will occur in March 2024 and 2025. Information from these field experiments will help optimize fertilizer rates to current slash pine stands to minimize pitch canker severity.