EFFECTS OF METHYL JASMONATE ON THE RESISTANCE OF LOBLOLLY PINE TO SOUTHERN PINE BEETLE

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ABSTRACT

Three applications of methyl jasmonate (MeJ) (5mM, 50mM, 500mM) were applied to the inner bark of 23-year-old loblolly pine (Pinus taeda, L.); a 50mM was applied to the inner bark and as a root drench in juvenile loblolly pine; and a 5mM was applied to loblolly seedlings. Applications of 500mM MeJ caused significant increases in resin flow in 23-year-old trees. The combination of 50mM inner bark/root drench caused significant increases in resin flow in juvenile loblolly. Significant increases in resin flow also occurred in seedlings treated with 5mM MeJ. The seedlings were also treated with 5mM, 50mM, and 100mM MeJ to observe the formation of traumatic resin ducts, which were more prevalent in 5mM seedlings. The MeJ treated 23-year-old trees were inoculated with Ophiostoma minus and the 500mM treatment produced the smallest lesions and proved to be more effective in stopping fungal colonization. MeJ also increases monoterpenes content which increases oleoresin toxicity, thus making it an effective defense elicitor in loblolly pine against southern pine beetle.