EVALUATING METHYL BROMIDE AND ALTERNATIVE FUMIGANTS ON PINEWOOD NEMATODE FOR APPLICATION IN U.S. LOG EXPORTS

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We evaluated methyl bromide, sulfuryl fluoride, ethanedinitrile, & cylinderized gaseous phosphine for effectiveness in providing quarantine level control of pinewood nematode, *Bursaphelenchus xylophilus*.

Small scale laboratory experiments were conducted with wood chips inoculated with nematodes to establish baseline dose-mortality for each treatment. Follow up experiments used larger blocks to simulate conditions of log fumigation by requiring through-bark penetration to kill nematodes. Experiments were conducted at 20 °C with varying initial concentrations and durations. Pinewood nematodes were extracted using the Baermann funnel technique at the six day and 21 day point post treatment.

Results found phosphine provided complete control of nematodes in chips with an initial dose of 1500 ppm (2.15 mgL-1) for treatments 12 days and longer. Ethanedinitrile showed complete efficacy at rates of ≥30 mgL-1 in 24 hr treatments, while sulfuryl fluoride results were more variable across experiments, but generally effective at rates ≥80 mgL-1 in 24 and 48 hr exposures.

In blocks simulating logs, efficacy was reduced across the fumigants, largely as a function of the fumigants ability to penetrate through the bark and contact nematodes in the wood.