

Do Bark Beetle Sprays Prevent *Phloeosinus* species from Attacking Cypress and Juniper?

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Abstract—*Phloeosinus*-caused mortality of Arizona cypress, (*Cupressus arizonica*), oneseed juniper, (*Juniperus monosperma*) and alligator juniper, (*J. deppeana*) has been observed at high levels in Arizona during the past 3 years. Currently, there are limited preventative measures to protect high-value cypress and juniper trees against *Phloeosinus* attack. Insecticides that are being used to prevent bark beetle attack of individual high value pine trees may provide one method of protection.

This study was designed to determine the efficacy of Sevin SL (carbaryl), Permethrin Plus C (permethrin), and Biflex (bifenthrin) in protecting Arizona cypress and oneseed juniper from attack and colonization by cypress and cedar bark beetles (*Phloeosinus* spp.). Freshly cut bolts were used in the treatment as a surrogate to live trees. Treatments were 1.0% and 2.0% Sevin SL (carbaryl), 0.2% Permethrin Plus C (permethrin), and 0.03% and 0.06% Biflex (bifenthrin).

Preliminary results using Arizona cypress indicate both the bifenthrin treatments and the permethrin treatment passed the binomial test (Null: successful defense = 90%), carbaryl did not. The bark beetle species attacking Arizona cypress was identified as *Phloeosinus cristatus*. Results from the oneseed juniper treatments were not conclusive since only 50% of the control bolts experienced beetle attacks; causing this experiment to fail to meet the criteria set for a rigorous test of the treatments. Attacking beetles were identified as *Phloeosinus scopulorum neomexicanus*.

The preliminary conclusions indicate Sevin SL (carbaryl) was not effective at a 2% formulation in preventing *Phloeosinus cristatus* attacks on Arizona cypress bolts, but was effective for protecting oneseed juniper at a 1% formulation. Both the 0.03% and 0.06% Biflex (bifenthrin) formulations and the 0.2% Permethrin Plus C (permethrin) treatment were effective at preventing successful *Phloeosinus* attacks on Arizona cypress and oneseed juniper. These single tree protection tests will be repeated in 2005 to draw more conclusive results, and will be extended to testing on alligator juniper.

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