

## USE OF TRUNK MICRO-INFUSION TREATMENTS FOR THE MANAGEMENT OF SPECIFIC INSECT PESTS OF SEED ORCHARD AND PLANTATION TREES

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Cone and seed insects severely reduce potential seed yields in southern pine seed orchards that produce genetically improved seed for regeneration programs. Some of the more important insect pests include the coneworms (*Dioryctria* spp.) that attack flowers, cones and stems of pines and the seed bugs (southern pine seed bug, *Leptoglossus corculus*, and shield-backed pine seed bug, *Tetyra bipunctata*), that suck the contents from developing seeds in conelets and cones, scales, thrips and cone beetles. Without a comprehensive insect-control program, these pests commonly destroy 50% of the potential seed crop. Other scolytid beetles, such as Ips engravers (*Ips* spp.), black turpentine beetle (*Dendroctonus terebrans*) and southern pine beetle (*D. frontalis*), can cause extensive direct mortality to trees in seed orchards, progeny test sites and commercial plantations.

The efficacies of systemic insecticides emamectin benzoate and imidacloprid have been evaluated by the Forest Pest Management Cooperative in numerous seed orchards and plantation trials during the past 19 years for preventing damage and mortality to cones and/or trees by cone and seed insects, cone and bark beetles and other arthropods. Emamectin benzoate has been found to be consistently effective in reducing cone damage and mortality (80 – 95%) by coneworms and to a less extent damage caused by seed bugs and slash pine flower thrips in both slash pine and loblolly pine orchards for two years compared to untreated checks. In contrast, imidacloprid is effective against seed bug and pine needle scale, but less effective against coneworms. Additional trials also have shown that a single application of emamectin benzoate has good activity against several species of scolytid bark and cone beetles for two or more years.

Although micro-infusion treatments have been proven to be highly effective at reducing damage and/or mortality, single tree injection applications have the stigma of being somewhat time consuming. A recent development in application technology will serve to significantly reduce application time and costs. This new method will be described.

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