

Progress toward developing trapping techniques for the emerald ash borer

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Since the 2002 discovery of emerald ash borer (EAB), *Agrilus planipennis* Fairmaire (Coleoptera: Buprestidae), in southeastern Michigan and Windsor, Ontario, the distribution of this exotic insect has continued to expand. The primary infestation in Michigan currently includes 13 counties, with small isolated pockets in at least 13 other counties. Accurate delimitation of the infested area and detection of new outlier infestations is critical for regulatory officials who must establish the quarantine boundaries and implement eradication and control measures. Trapping and detection techniques would greatly enhance survey efforts to delineate the distribution of EAB and locate new infestations.

In 2003, we collected and analyzed ash leaf and bark volatiles. Electro-antennogram detection and walking bioassays were used to select candidate compounds that were tested both individually and in blends using four different trap types in the field. Trap trees (healthy, girdled, and herbicide-treated) and trap logs were also tested. Among trap trees, trap logs and baited traps tested, the girdled trees were found to be the most effective in capturing EAB.

In 2004, we identified additional potential attractants for EAB using coupled gas-chromatography electro-antennal detection of ash volatiles. Wind tunnel and walking olfactometer bioassays were used to select the most attractive compounds for field testing. Trapping experiments using a prototype purple-panel trap and other purple trap designs were conducted to compare several potential attractants. Purple panel traps baited with a blend of host volatiles captured significantly more EAB than traps baited with various individual compounds. Trap tree studies were conducted to compare girdled, wounded, healthy, and herbicide-treated ash trees; trap trees located along the edge of a stand, within a close canopy stand, or in open canopy conditions; and healthy or girdled trap trees baited with attractants and/or colored bands. The herbicide-treated trees were significantly more attractive than healthy ash trees; girdled and wounded trees were intermediate in attraction. Trap trees located in open canopy conditions were significantly more attractive than trap trees located along the edge of a stand or within a closed canopy stand. There were no significant differences in the number of EAB captured on trap trees with different colored bands or baited of ash volatiles.