
EVALUATION OF VARIOUS INSECTICIDES APPLIED TO THE BARK TO CONTROL EMERALD ASH BORER

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ABSTRACT

The emerald ash borer (EAB), *Agrilus planipennis* Fairmaire (Buprestidae), a native of Asia, was first discovered in the United States and Canada in 2002. Within the area that is generally infested with EAB, homeowners and communities are typically either removing infested trees or treating them with various insecticides to protect them from further EAB attack. In addition, questions have arisen as to whether various insecticides will kill within-tree EAB life stages if applied to the bark surface soon before adult emergence is to begin. We report here the results of two studies that tested one systemic insecticide and four topically applied insecticides.

In a 2003-2004 study, we tested the product D-20 by Perma Guard (Albuquerque, New Mexico), which is composed of diatomaceous earth and natural pyrethrins (0.2 percent a.i.). In this study, we moved 40 uninfested green ash trees, 4-5 m tall, to an area that was heavily infested with EAB near Ann Arbor, Michigan. The trees were moved on 26 June, transplanted on 26-27 June, and treated on 27 June 2003. EAB adults were able to freely infest all trees. There were five treatments using eight trees per treatment: untreated control trees, one application of D-20, two applications of D-20, three applications of D-20, and trees treated with two applications of imidacloprid (Imicide by Mauget). We used a backpack sprayer to apply D-20 to both the foliage and trunk. D-20 was applied on 27 June, 14 July, and 30 July. D-20 was mixed with water at a rate of 1 tablespoon per gallon, which was recommended by the owner of Perma Guard, Mr. Wallace Tharp. The first set of Mauget capsules were applied on 27 June, but because uptake was poor on a few trees, we treated all eight trees again on 14 July. In fall 2003, we felled and debarked half the trees. EAB had completely colonized the trunk of all control trees as well as all trees that had been treated with D-20. We found no live EAB larvae on any of the Imicide-treated trees, and except for a few EAB galleries that had terminated early, there was no other evidence of EAB attack. In the spring of 2004, all of the remaining Imicide-treated trees leafed out, but none of the control or D-20-treated trees produced any foliage. This study showed that D-20 did not protect the trunks of trees from EAB infestation, but a double dose of Imicide was highly effective.

In a 2004 study, we sprayed EAB-infested ash logs with one of three products: Astro (permethrin, a pyrethroid by FMC), Onyx (bifenthrin, a pyrethroid by FMC), and Merit (imidacloprid, by Bayer). One set of logs was treated twice with Merit. We sprayed the outer

bark of all logs in mid-May or early June, and later placed the logs in rearing cages. Early estimates of EAB mortality range from 66 percent to 94 percent control. This study indicates that EAB life stages can be killed when the bark surface is treated with various insecticides.