

INCIDENCE OF ASIAN LONGHORNED BEETLE INFESTATION AMONG TREATED TREES IN NEW YORK

Alan J. Sawyer

USDA-APHIS-PPQ

Center for Plant Health Science and Technology
Pest Survey, Detection and Exclusion Laboratory
Otis ANGB, MA 02542

Alan.J.Sawyer@aphis.usda.gov

ABSTRACT

Treatment of uninfested host trees with the systemic insecticide imidicloprid is an important component of the eradication program for Asian longhorned beetle (ALB), *Anoplophora glabripennis* (Coleoptera: Cerambycidae). From the year 2000 to 2006, nearly 700,000 treatments have been applied to almost 250,000 individual trees in Illinois, New York, and New Jersey (about half of these in New York). To gauge success of the treatment program and to be alert to potential problems, we have been keeping track of the treatment history of all trees found with ALB damage. Infested treated trees are dissected, the number of ALB egg sites and exit holes are counted, and the date of origin and developmental status of the life stages are determined in the laboratory. Growth-ring analysis is used to date the injury.

Of 8,372 infested trees discovered and removed over the course of the program, only 104 had been treated (101 of them in New York). Removal of trees despite treatment is not a cause for concern, however.: we know that uptake and distribution of the chemical within a tree can be problematic, so 100 percent protection after a single application is not really expected. Nonetheless, signs of treatment problems would be: (1) an adult emerging the year after treatment (indicating that an egg laid within a few months of treatment had survived), (2) a live larva found several months after treatment (for the same reason), (3) infestation after two or more consecutive years of treatment (which should have left higher, more uniform residues of imidicloprid), or (4) substantial numbers of insects surviving a treatment. An adult emerging in the same year as a tree's first treatment is not a concern because the egg was laid well before treatment, and the larva was probably in a late stage of development, protected in the xylem, at the time of application. In fact, only an emergence hole provides concrete evidence that an ALB has survived treatment, because a larva found alive when a tree is removed would not necessarily have completed development. Among 62 treated trees in New York bearing one or more exit holes, in 31 cases, the emergence occurred either before or within a few months of the first treatment or at least two years after the last treatment, leaving just 31 examples of post-treatment survival that might reflect a problem.

These are not all clear-cut examples of treatment failure. Treatment records for New York from 2001 and 2002 are unreliable because they do not include specific addresses. Although maps of the treated areas do exist, many individual properties were skipped for treatment because of access issues. In addition, ALB damage was not precisely dated by growthring analysis until late 2003.

In all, there were just six (6) cases with concrete evidence of adult emergence during the year after treatment. Five of these were large maples (DBH \approx 51-66 cm = 20-26 in.) treated in 2004 by soil injection at a single location (Mt. Olivet Cemetery, Queens). Soil conditions, application problems or insufficient dosage may have been responsible for the incomplete protection. Still, only six ALB adults emerged from these five trees. Five trees in Brooklyn, all treated by soil injection in 2005, were found with live larvae in June 2006 (before that year's emergence period). Given the late date, it is quite possible, though not certain, that these larvae would have completed development to adulthood. The sixth tree, a 25 cm (10 in.)-diameter maple in Queens treated in 2003 and 2004 by the Mauget trunk injection system, had three emergence holes dated to 2003 and 2004.

Program-wide, only 11 out of nearly 250,000 at-risk, treated trees in New York, Illinois, and New Jersey (0.004%) have been found with strong evidence that some ALB may have escaped the effects of chemical treatment, and these produced only nine adult ALB. Such a low rate of survival testifies to the outstanding success of the treatment program. It is almost certain that the imminent eradication of ALB in Chicago (to be declared in 2008, pending four years of negative survey results) can be attributed in large part to this strategy.