Entomology Research Update

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Mauget Injections for Control of the Spring Cankerworm, *Paleacrita vernata* (Peck) on Mature American Elm.

Mauget B (Bidrin) was injected into elms on May 18, 1989, when cankerworm egg hatch was complete and second instar larvae were just beginning. Leaves were at least half expanded and feeding was noticeable. All study elms were injected with 2 ml capsules. The number of capsules used per tree was based on diameter at breast height.

Leaf samples were collected on May 23, (five days post-treatment) and June 1, (14 days post-treatment) frozen, and sent to an independent testing lab for residue analysis. Samples were collected from east and west quadrants at three crown levels within each tree (lower, middle, upper one-third). Defoliation was estimated in the same locations as residue analysis on June 8, 1989, using a 0-4 rating scale where: 0= 1-24; 2 = 25-30; 3 = 51-75; and 4 = 76-100% defoliation.

Mauget B significantly reduced defoliation compared to the untreated check. However, large within tree variation was apparent. Leaves in one area showed little damage while other areas of the same tree were completely defoliated.

Residue analysis also showed within tree variation, suggesting that Mauget injection did not result in uniform distribution of Bidrin in mature American elms. Overall, residues diminished by 80.0% between 5 and 14 days post-treatment. Residue levels did not appear to be strongly correlated with defoliation.

Cambial necrosis and wood defects were observed in sectioned trees two months after treatment. This damage typically extended at least one foot above and one foot below all injection sites examined.

Preliminary observations suggest Mauget B treatment of mature American elms did not result in satisfactory control of the spring canker worm. In addition, extensive wood and cambial damage associated with injection sites may make this method of application unsuitable for successive treatments.

Ash Flower Gall Studies

Robert Wawrzynski completed his Masters Degree in March 1989. His thesis is titled: Ash Flower Gall: Within Tree Distribution, Chemical Management and Effect on Tree Vitality. Two papers have been submitted based on his research. They are: Wawrzynski, Robert P. and Mark E. Ascerno. 1989. Ash Flower Gall: Within Tree Distribution and Chemical Management, J. Aboriculture. 15(9).

Abstract: Ash flower gall (AFG) distribution within green ash *(Fraxinus pennsylvanica* 'Marsh'), and the chemical control of *Eriophyes fraxiniflora* Felt, which causes AFG, are discussed. Gall density was found to be significantly different among crown levels in the trees studied. Percentages were approximately 62, 25, and 13 for the top, middle, and bottom crown levels, respectively. This distribution may vary from tree to tree, and is, therefore, most useful in large scale sampling programs. Chemical controls were erratic, with carbaryl (Sevin) 80S providing the best control. Dicofol (Kelthane) 35WP and fluvalinate (Mavrik Aquaflow) treated trees had higher gall numbers.

Wawrzynski, Robert P. and Mark E. Ascerno. In review. Evaluating The Effects of Ash Flower Gall Induced by *Eriophyes fraxiniflora* Felt (Arcarina: Eriophyidae) on tree vitality. J. Arboriculture.

Abstract: The effect of ash flower gall (AFG) on green ash *(Fraxinus pennsylvanica)* 'Marsh') vitality was assessed using root starch, diameter at breast height (DBH) and Shigometry techniques. A chi-square analysis for root starch content versus gall density, indicated that root starch storage is independent of tree gall numbers. Percent change in DBH for the growing season was not affected by gall density (P=.261). In addition, percent change in electrical resistance and average electrical resistance over the growing season, were found to be independent of tree gall density (P-.054, P=.807, respectively) in multiple regression analyses. Assuming the methods used are reliable vitality indicators, AFG has no significant affect on tree health. These results can be used in public education programs to better inform persons about AFG, which may reduce the demand for control measures for this problem.