Evaluation of Management Factors Affecting Volatile Loss and Dislodgeable Foliar Residues

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Goals:

- *The role of vapor pressure and temperature will be evaluated in terms of developing a screening system for turfgrass pesticides*
- *Pesticides with possible safety concerns will be further evaluated in the context of best management practices, including the role of spray volume and adjuvants.*
- *The role of thatch accumulation on the dissipation of volatile and dislodgeable residues will be assessed.*

Cooperators:

Dr. R. Cooper, NC State University
Dr. D. Haith, Cornell University

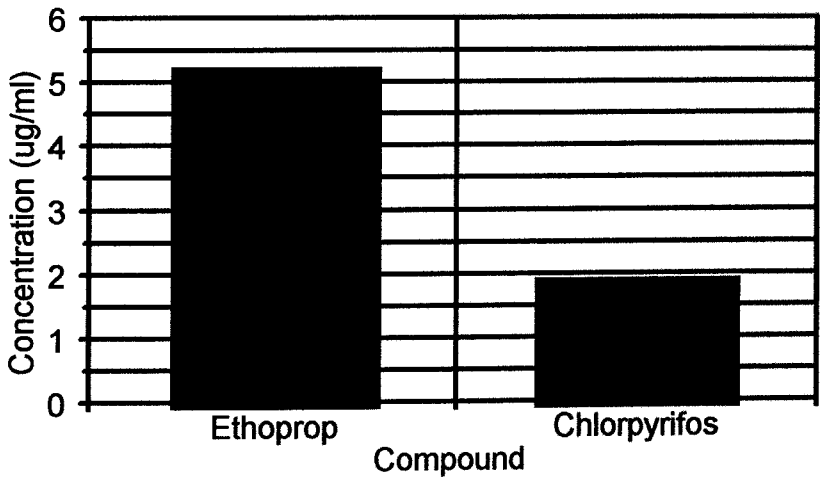
Volatile and dislodgeable samples and weather data have been collected for the completion of the first objective, "Development of a best management system for screening turfgrass pesticides for potential volatiles and dislodgeable foliar residues." To date, 450 samples and weather data were collected from June to November, 1995. Samples have been concentrated and stored in a freezer for analysis that is currently being carried out.

Analytical methods have been developed that allow multiple residues to be determined in each of three groups of pesticides that are applied together: Group I (Diazinon, Ethoprop, Chlorpyrifos, Isazofos, Isofenphos); Group 2 (Trichofon, DDVP, Carbaryl, Bendiocarb, Cyfluthrin); Group 3 (Chlorothalonil, Propiconizol, Iprodione, Thiophanate methyl).

Two additional 10-meter radius turfgrass plots were established in September in order to complete Objective 3 in the third year of funding of the current proposal.

Dr. D. Haith, Cornell University, has been brought onto the project to provide his expertise in developing an algorithm relating HQs, volatility, temperature, and relative humidity for use as a "best management" tool for superintendents in the proper selection of pesticides to avoid golfer exposure.

Compound Volatilization



Volatile residue levels for ethoprop and chlorpyrifos at one to three hours after application. Ethoprop levels are shown to be 2.7 times higher than chlorpyrifos. This is primarily due to the difference in the vapor pressure of the two compounds (vapor pressure: ethoprop = 3.49×10^{-2} mm Hg and chlorpyrifos = 1.87×10^{-5} mm Hg).