UCRTRAC Accumulative Research Summary
Section B: Impact of Turfgrass Chemicals and Fertilizers on the Environment
Project 1

Title: Measurement and Model Prediction of Pesticide Partitioning in Field-Scale Turfgrass Plots.

Objective: The general purpose of this project was to conduct a mass balance assessment of turfgrass pesticides in field plots and use the data obtained in the assessment to test and modify a pesticide transport model.

Location: Creeping bentgrass putting green, designed and constructed for lysimeters, located at the UCR Turfgrass Field Research Facility.

Duration: 3 years

Funding Source: United States Golf Association

Findings:

- Three field trials were conducted: chlorothalonil (Daconil 2787) and metalaxyl (Subdue) were applied at label rates in the first, while chlorpyrifos (Dursban 2E) and trichlorfon (Dylox) were applied at label rates in the second and third trials. Air, leachate, soil, and tissue samples were collected from replicate plots for periods ranging from 7 days for air samples to more than 200 days for leachate samples. The pesticides were extracted from the samples and the extracts were analyzed using standard methods.

- With the exception of Dursban 2E (15.7% and 10.5% that was applied volatilized into the air, trails two and three, respectively), none of the compounds were found to volatilize or leach to a significant extent (less than 0.1% that was applied). Most of the applied mass for all compounds was either degraded or absorbed to the soil particles.

- The contaminant transport model CHAIN_2D was used to simulate the environmental fate of the pesticides. Overall, model predictions compared favorably with measured field results.

Status: A three-year study was completed and Progress and Final Reports were prepared. Information associated with this project has been presented at the Hi-Lo Desert GCSA Educational Seminar, at the UCR Turfgrass Research Conference and Field Day, and at the American Chemical Association Annual Meetings. Abstracts were published for the later two meetings. We plan to prepare a technical article for a scientific journal.
