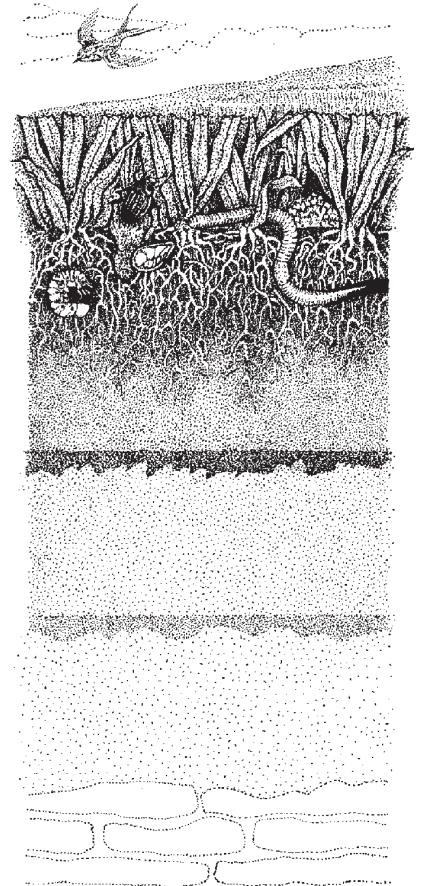


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Turfgrass Pesticide Leaching Studies

Research recently conducted at the Cornell University Turfgrass Field Research Laboratory using the AREST facility (see CUTT V.2#4 for a description of AREST) investigated the potential of some commonly used turfgrass pesticides to leach from a two year old medium-maintenance Kentucky bluegrass turf. The results showed that the risk of pesticide leaching is generally small but that the risk is influenced by the combination of soil, pesticide and leaching event. The differences found indicated that decisions a turfgrass manager makes may affect whether or not pesticide leaching occurs. ■

This article is a summary of the work conducted by Nina Roth Borromeo under the guidance of Professor Marty Petrovic. The research partially fulfilled the requirements for Ms. Borromeo's Master of Science degree. Money for this research was provided partially by the New York State Turfgrass Association from their matching funds program.

Experimental Procedure

The three factors under investigation in this experiment were soil type, pesticide type and leaching event. The choices for each variable were made in order to reflect a range in the potential for leaching. All combinations of soil and leaching regimes were tested for all of the pesticides in the study.

A soil's leaching potential was expected to be reflected partially by soil texture and partially by the soil organic matter content. Finer textured soils and soils containing more organic matter were expected to have lower leaching potentials. The three soils used in the experiment were a fine

textured Hudson silt loam, a medium textured Arkport sandy loam and a coarse textured medium sized sand (which met the USGA sand size specifications for putting green construction). The Hudson soil contained the most organic matter, 5.0 %, while the sand contained the least organic matter, 0.06 %. The Arkport soil contained 3.9 % organic matter.

The chemicals tested were carbaryl, chlorothalonil, and the diethylamine salts of 2,4-D and dicamba. Two factors which may influence the leaching potential of a specific pesticide are the solubility of the pesticide and the adsorption of the pesticide to soil particles. High solubilities and low adsorption ratings should indicate a greater risk for leaching. Table 1 lists some of the characteristics of the four pesticides tested. Therefore it would appear that dicamba and 2,4-D would be the most susceptible to leaching while chlorothalonil would be the least susceptible. The chemicals were applied to the plots at the recommended rates, so

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