391

DIAZINON VOLATILIZATION: MEASUREMENT AND SIMULATION

R. Reichman[1], Y. Mahrer[2], D.E. Rolston[3]

Environmental Physics, Israel Institute for Biological Research, Ness Ziona, Israel

[2]The Seagram Center for Soil and Water Sciences, Faculty of Agricultural Food and Environmental Quality Sciences, The Hebrew University of Jerusalem, Rehovot, Israel

[3]Land, Air and Water Resources, University of California, Davis, USA

Volatilization can be a major cause of pesticide loss from target areas. Accurate estimation of pesticide volatilization rates is essential for assessing the effects of such emissions upon the environment. A combined soil-atmosphere model to predict the fate of soil-applied pesticides with time after application was developed and tested. This model was evaluated with diazinon applied at a California field site on Yolo silty clay during the period of June-July, 2000. The volatilization rates were measured using a dynamic flux chamber. Measurements show that the chamber depressed soil temperature, with the extent of the depression depending mainly on time of day and soil moisture. Further measurements aimed to quantify the chamber effect on the covered environment were conducted during the period of April 2002-August 2003 in Rehovot, Israel. The model was modified to account for the effect of the chamber placed on the soil. A good agreement between the simulated and measured soil temperature and moisture for the two soil depths (1 and 5 cm) was found. Both calculated and measured diazinon volatilization fluxes follow the same diurnal pattern that is sensitive to soil moisture. The agreement between measured and simulated diazinon fluxes was quite good.