

Potential Movement of Certain Pesticides Following Application to Golf Courses

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Goals:

- *To obtain and develop mathematical equations for predicting the potential movement of pesticides through golf course greens constructed according to USGA guidelines.*
- *To determine the potential runoff movement of pesticides from golf course fairways on Piedmont soils and to develop management strategies for reducing the movement.*

The objectives of our research program over the past six years has been to evaluate the potential movement of pesticides and fertilizer components following application to golf courses and to develop Best Management Practices to reduce the potential for pesticide transport to potable water systems.

The initial steps for evaluating the potential movement of pesticides has been accomplished using pesticides registered for use on golf course greens and fairways on simulated greens and fairways at the Georgia Experiment Station. The facilities were constructed at the Georgia Station and analytical procedures were developed in our laboratories for this research program. Our simulation facilities were developed for the control of the environmental parameters in order to determine the potential transport of pesticides through the soil and in surface water runoff. Experimental control was necessary for defining and controlling the variable parameters that influence pesticide transport into the environment

Although, some of the recommended Best Management Practices resulting from our research program may already be in practice, there are no real data to support those practices. Additionally, there may be a concern for the choice of pesticides included in our research. Initially, we realized that the actual molecule used was not as important as to establish the characteristics of an expanse of molecular structures in the simulated greens and

fairways (i.e., 2,4-D, dicamba, and mecoprop are not used on a lot of golf course greens but there is more research information available on these molecules than any other analytes). Therefore, we included 2,4-D, dicamba, and mecoprop in many of our simulated greens treatments. From these data we are developing models for predicting the potential movement of many molecules through golf course greens and from golf course fairways.

In 1995 high school student conducted research to determine the potential risk from kneeling on a green that had been treated 2,4-D, mecoprop, and dicamba (included in 1995 annual report). Additionally, in 1997 a senior from Mercer University conducted research to determine the potential risk from licking a golf ball that had been rolled across a treated green and from chewing a tee that had been placed in a treated tee box.

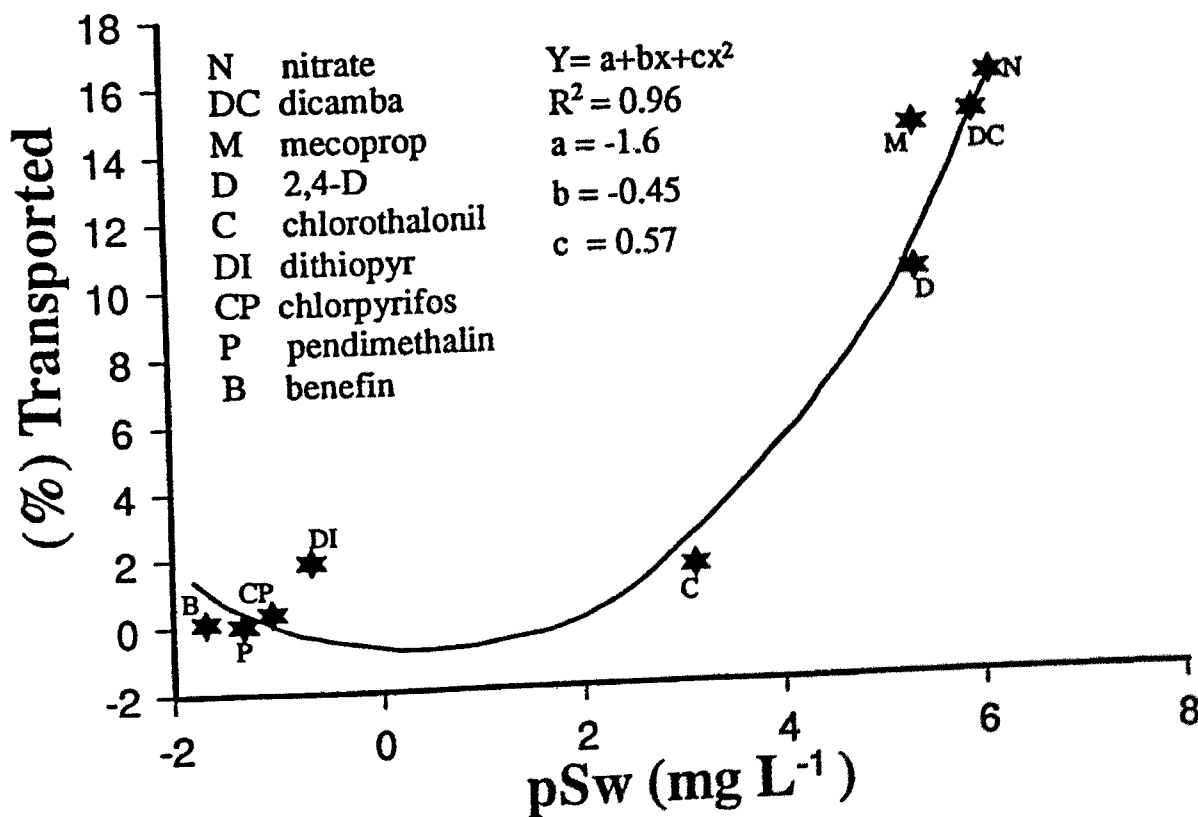


Figure 12. Fraction of the applied pesticides transported from simulated fairway plotted for the log of the water solubility (pSw) of the analyte.