

CHEMICAL VOLATILIZATION FOR PEST CONTROL

Karen L. Kampman and Joe J. Hanan¹

This short note outlines one of the several problems in investigating a method of great interest to commercial growers for pest control in greenhouses.

Vaporization of chemicals for greenhouse pest control represents a cheap, effective and efficient means of distributing a chemical in an enclosed space. Work by Dr. D.L. Coyier, Oregon, showed considerable effectiveness of Morestan (oxythioquinox) for powdery mildew control on roses, using cheap hot plates for vaporization. Volatilization of dinocap, phenapronil and fenarimil have also been shown to be effective. Several publications in the *Roses, Inc. Bulletin*, by Coyier have developed the concept of pesticide vaporization. Personal discussions with Coyier indicated that tests have been carried out on other plant species and with other materials for pest control. The method is usually effective.

The considerable interest in this method prompted us to consider research at CSU to look at phytotoxicity problems with these materials. Studies on phytotoxicity could be carried out with minimum expenditure in existing facilities — even though this would tell us nothing as to effectiveness in actual control. However, great effectiveness of a chemical in pest or fungal control when vaporized would be of little use if the procedure damaged vegetation or retarded growth.

We began work two years ago, and after learning of the legal requirements in discussion with Dr. Bert L. Bohmont (CSU Agricultural Chemical Coordinator), we submitted Pesticide Clearance Request Forms to examine 13 chemicals for vaporization:

Kelthane (dicofol)
Cythion (malathion)
Metasystox-R (oxydemeton-methyl)
Orthere (acephate)

Pentac
Pirimor (pirimicarb)
Karathane (dinocap)
Plictran (cyhexatin)
Tedion (tetradifon)
Vydate (oxamyl)
Vapona (DDVP)
Lannate (methomyl)
Dibrom (naled)

Six to eight months later, we found that only Shell Chemical has approved our examination of DDVP for vaporization. The remaining companies were not agreeable to the use of their products in this fashion due to a number of reasons such as instability at high temperatures, fire hazards and toxicity of the chemicals used in this fashion. In particular, Metasystox-R, according to the manufacturer, has a flash point of 68°F. In another instance, the manufacturer felt that their compound was extremely effective as presently applied, and to examine its application through volatilization could conceivably reflect adversely on the product.

Although we carried out some studies on a number of chemicals, for us to report on those results could open the University to the possibility of legal action, especially without clearance from the manufacturer. In the area of chemical utilization in agriculture, the legal and paper requirements are extensive with a bureaucratic infra-structure which greatly increases costs and time. Chemical use is an area of research which cannot be carried out for the purpose of obtaining timely and immediate data, contrary to the manner in which we have conducted some research in the past.

¹Graduate Assistant and Professor.