

## Effect of Citizen Chemophobia on Plant Pathology

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Chemophobia is the fear that the widespread use of chemicals will destroy our environment and adversely affect our personal health. Beginning with the discovery that chlorinated hydrocarbons such as DDT tend to persist and create environmental problems, the public's anxiety has been fueled by the dioxin exposure at Time Beach, Missouri, in rivers, and of veterans in Vietnam; by the burying of chemical wastes in the Love Canal area; and by the chemical control of lamprey eels in many lakes and of the

gypsy moth epidemic in the Northeast, to name a few. The American public has developed a very real, a very widespread, and in some cases a very justifiable fear of chemicals. How does this affect our uphill battle to control plant diseases?

First of all, our level of awareness has been raised considerably. The agricultural industry has become rather an elitist group. In the agrarian society of the 1800s, 90% of the population produced 100% of the food. Today, 3% raise 120% of our food needs, with the surplus either stored or exported. Even including peripheral personnel such as plant pathologists, a small fraction of our population perhaps felt at times that they knew best how to feed the globe, that their mission in life superseded extremists' reactions to chemical usage. Today we can no longer avoid the cold hard facts; we must be prepared to *respond* to the outcry of those we help feed against chemical usage. Guilt by association has become a way of life.

Second, all of us—researchers, advisors, consultants, growers—have been forced to look closely at the long-range effects of the use of chemicals on the environment and the health of our citizens. Perhaps the best example of this is groundwater contamination. Groundwater is one of our most valuable natural resources, an inalienable right. In New York State, one-third of the people use groundwater for their drinking water

supply. On Long Island, over 3 million people depend on groundwater as their only source of drinking water. In New York, as in other parts of the country, aquifers may be composed of loose or unconsolidated sand and gravel deposits; Long Island aquifers are composed entirely of such deposits. The intrusion of aldicarb into groundwater appears to be associated with the use of this insecticide-nematicide on highly permeable soils, low in organic matter and underlaid by a high groundwater table. Shallow wells in these soils near aldicarb-treated fields have heightened the chance for contamination. Cooperation is obviously needed from all segments of our society, including industry, farmers, and homeowners, because each category of human activity can have an impact on the purity of groundwater. Among the sobering aspects of groundwater contamination are the predictions based on computer simulations. Such statements as "It may take up to 10 years for chemicals to get to the water table and then 100 for them to work their way out" add credence to the thought that in America we must shift from short-term solutions, profits, and numbers to long-term goals.

Finally, the public's heightened awareness of chemical usage is going to make our goal of controlling plant diseases much more difficult. We are seeing the rapid loss of many pesticides—EDB, DD, 2,4,5-T, to mention a recent few. We see a tightening in the policies for securing Section 18s for special local-need usages. We see chemical companies reluctant to even market new materials from fear of being embroiled in class-action lawsuits.

There is no doubt that fear of the effects of *misused* chemicals is totally justified. There is also no doubt that without chemicals our control over plant diseases is greatly—perhaps irreparably—weakened. We are not alone in this challenge. The credibility of the Environmental Protection Agency is critical. The agricultural chemical industry must also improve the public's awareness of pesticide safety and benefits. The so-called four Rs of proper fungicide usage—right chemical, right dosage, right coverage, right timing—must be reinforced by judicious use of chemicals. To this must be added continued input into integrated crop management of alternative ways to control plant diseases—intercropping, rotation of crops, biological control methods. The short-term attitudes will change to long-term goals and accomplishments.