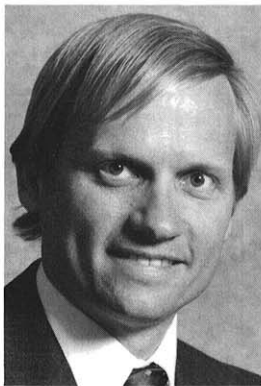


# Ciba-Geigy Award

Sponsored by the Ciba-Geigy Corporation, this award is given to individual plant pathologists who have made significant contributions to the advancement of knowledge of plant diseases or their control. The award consists of a trophy and an expense-paid trip to Basel, Switzerland.

## James J. Marois



**James J. Marois** was born on January 9, 1953. He received a B.A. degree in biological sciences from Florida Atlantic University in 1975. Following graduation, he worked for two years as a plant pathologist/entomologist for Yoder Brothers of Florida. He then enrolled in the Plant Pathology Department at the University of Florida and received a Ph.D. degree in 1980. His research, under the direction of Professor D. J. Mitchell, focused on biological control of *Fusarium* crown rot of tomato. Following his graduate

study, he joined the USDA Soilborne Diseases Laboratory in Beltsville, MD, where he continued research in the area of biological control of soilborne plant pathogens. In 1984, Dr. Marois joined the faculty of the Department of Plant Pathology at the University of California, Davis, and was promoted to associate professor in 1987.

During the last ten years, Dr. Marois has made important contributions in the area of biological and cultural control of plant disease. Dr. Marois' success in developing innovative disease management strategies is the result of a strong ecological orientation in his research programs. In his doctoral research, he attained successful biological control of *Fusarium* crown rot, caused by *Fusarium oxysporum* f. sp. *radicis lycopersici*, of transplanted tomatoes in commercial fields by introducing a composite of antagonistic fungal species which comprised early successional members of the soil microbial community (*Phytopathology* 71:167-70; 71:1251-56; 71:1257-60). These results represented the first reported manipulations of antagonistic microbial populations based on principles of ecology. From 1980 through 1983, while working at the USDA Soilborne Diseases Laboratory, he continued to make important contributions to the understanding of population interactions which occur between soilborne pathogens and microbial antagonists (*Phytopathology* 83:680-84; 85:115-18; 76:643-46; and *Soil Biol. Biochem.* 16:387-980; 17:155-58).

More recently, Dr. Marois' contribution to plant pathology research has been to provide insight into the relationship between plant microclimate and disease development. From these studies, new strategies have been developed to modify the microclimate so as to control disease and reduce pesticide applications. This research was undertaken initially in response to a problem faced by the wine grape industry—no effective means of controlling *Botrytis* bunch rot (*Botrytis cinerea*) in vineyards. Canopy management, in the form of leaf removal from the fruit zone,

was examined as a means of reducing disease (*Plant Disease* 71:599-601). Removal of leaves alone controlled bunch rot at least as effectively as fungicides. An additional benefit of leaf removal was the improved quality of vintage (*Am. J. Enol. Vitic.* 39:49-54). Dr. Marois established a research program to investigate the basis of this management effect. The complexity of interactions among *B. cinerea*, climatic conditions, and grape physiology made it difficult to determine how bunch rot could be controlled. Dr. Marois and his associates pursued an indirect course by emphasizing research on understanding what changes in the microclimate of the fruit zone were brought about by leaf removal. Dr. Marois' background in ecology heightened his awareness of the multivariate nature of microenvironment conditions. Using recently available microelectronic sensing and data analysis systems, temperature, humidity, wind movement, and other microclimate variables, he and his associates compared vine canopies under various management schemes. The most significant aspect of their results was that microclimate differences could be discerned only by simultaneously considering temperature, humidity, and wind speed factors which interacted to determine the drying capacity of the atmosphere in the fruit zone of canopies (*Phytopathology* 78:260-65; 79:395-401; *Agric. Ecosystems Environ.* In press).

The success of these canopy-management experiments was noted immediately by wine grape growers, more of whom have been using this practice every year. The insights provided by these studies have increased the opportunities to progress from empirical to more process-based approaches to disease management. At present, new strategies have been or are being developed for control of *B. cinerea* in grape, rose, and strawberry production systems. Applications of this approach to other crop systems will become increasingly important as pressures continue to mount to reduce the environmental impacts of disease control practices. Dr. Marois has published over 40 journal articles in this area of research.

Dr. Marois has been involved in professional activities throughout his career. He has served on the steering committee of the Eastern Regional Conference on root infecting microorganisms and has organized and chaired a teach-in session on "Computer Modeling of Plant Roots" at that year's regional conference. He has chaired a discussion session, "Quantification of Soilborne Pathogens," at the annual meeting of The American Phytopathological Society and has chaired the Soil Microbiology Committee of the Society. In 1988, Dr. Marois chaired the Program Committee for the international conference, "Risk Assessment of Biotechnology in Agriculture," held at the University of California (UC), Davis. Most recently, he has chaired the Graduate Group in Plant Protection and Pest Management at UC, Davis, and has invested much time in teaching a well-received class, "Concepts and Systems in Pest Management."