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.

Joyce E. Loper

Joyce E. Loper was born in Oakland, CA. As an undergraduate at the University of California, Davis, she became interested in biological research. While participating in an ecological research project at Yosemite National Park, she woke one morning to find a large black bear in her tent. At that moment, her research interests shifted toward more docile subjects, like plants, and toward scientific questions that could be addressed in managed ecosystems. She received an M.S. degree in plant pathology in from the University of California at Davis. From 1978 to 1980 she served as a staff research associate at the University of California at Berkeley and went on to complete a Ph.D. degree in plant pathology. From 1983 to 1985 she was a research scientist in the Biological Control Program of the Biotechnology Group at the Chevron Chemical Company in Richmond, CA, after which she joined the USDA-ARS in Beltsville as a research plant pathologist. In 1987 she transferred to the USDA-ARS Horticultural Crops Research Laboratory in Corvallis. Dr. Loper has a courtesy appointment of associate professor in the Department of Botany and Plant Pathology at Oregon State University.

Dr. Loper has made many important contributions to our knowledge of the nature of interactions between plant pathogens and saprophytic microbes in the rhizosphere as well as the interactions of these microbes with plant roots. Dr. Loper is best known for her ecological and genetic studies to elucidate mechanisms involved in pathogen suppression by rhizosphere bacteria. Until Dr. Loper's work, little knowledge existed about the iron acquisition systems of pathogens that are targets of biological control. Analysis of the siderophores produced by *Erwinia* strains led to her discovery that great heterogeneity exists in the iron uptake mechanisms in these strains and that strains with efficient uptake mechanisms are less sensitive to siderophore-mediated antagonism. Recent research has focused on understanding the regulation of genes required for biocontrol activity of bacterial

antagonists. Her genetic analysis of bacterial antagonists is not only basic research but is directly applicable to improving the effectiveness and reproducibility of biological control.

Dr. Loper has attracted particular attention and credit for her recent work in developing "biological sensors" of iron availability in the soil and rhizosphere; the sensors are based on the use of reporter genes fused to iron-responsive promoters of siderophore biosynthesis genes. This exciting work has allowed her to describe the actual microhabitats in which pathogens reside in the soil. Her finds have great implications for selecting and utilizing biocontrol agents for plant diseases.

Dr. Loper has also made important contributions to practical biocontrol of fire blight disease. With colleagues, she identified the importance of streptomycin resistance in *E. amylovora* strains in the Pacific Northwest and has initiated extensive research on the dynamics of biocontrol agents in pear flowers and their compatibility with other pesticide inputs. The research on fire blight is an example of how Dr. Loper has collaborated in a well-rounded research program that addresses disease control by using basic and adaptive research. Her success in this makes her a tribute to our profession.

Dr. Loper gets high marks from her colleagues for her cooperative and collaborative approach to science. She is willing to help others rather than to compete; this commendable trait sets an excellent example for other scientists. Dr. Loper is very effective in her relations with other scientists and has cooperative projects with several researchers at Oregon State as well as at other institutions.

Dr. Loper has served widely and visibly in various capacities, including as a senior editor of APS Press and as an officer in the APS Pacific Division. Dr. Loper's duties to APS Press involved editing four books. Dr. Loper has also been active as a member of the APS Bacteriology and Biological Control committees.

Dr. Loper has received considerable recognition for her contributions to the area of plant pathology and environmental microbiology, as evidenced by the many lectures she has been invited to present at international and national conferences; the level of recognition is impressive, given the relatively short time Dr. Loper has been a practicing plant pathologist. She also has an admirable service record to other governmental agencies and professional societies, including current membership on the National Research Council Board of Agriculture, the NAS panel on Biological Control, and the scientific advisory panel for the NSF Center for Microbial Ecology at Michigan State University.