

## Lee M. Hutchins Award

The Lee M. Hutchins Fund was established in 1979 by means of gifts from the estate of Dr. Lee M. Hutchins. The award, consisting of a certificate and income from the invested fund, is made for the best contribution to basic or applied research on virus or viruslike infectious diseases of fruit plants. The results of the research must have been published in an official journal of the Society.

### John W. Randles



**John W. Randles** is honored by the Lee M. Hutchins Award for his research into cadang-cadang of coconut palm and similar diseases. Some important applications of this work in relation to the etiology of other diseases of coconut palm and African oil palm were reported in *PHYTOPATHOLOGY* during 1980 and 1981 (*Phytopathology* 70:185-189; 71:1104-1107), and these papers constitute the focus of this award.

Cadang-cadang, or yellow mottle disease of coconut (*Cocos nucifera* L.), is perhaps the most serious disease of coconuts and has probably killed more palms than all other coconut diseases combined. First reported as a serious and spreading disease in San Miguel Island in the Philippines in 1931, it was estimated to have caused losses of about 12 million trees by the early 1970s. A viral etiology was suspected, but despite considerable effort, definite indications as to the nature of the causal agent and its mode of spread remained lacking until the publication by Randles in 1975 of evidence of its association with viroidlike ribonucleic acid species. Since then Randles has published, with various co-workers, a series of approximately 10 papers characterizing the etiologic agent of cadang-cadang and related diseases, five of which appeared in journals of the Society.

The first lead to the cause of cadang-cadang was the discovery of a low-molecular-weight RNA ("cc-RNA"), which was uniquely associated with diseased coconut palms (*Phytopathology* 65:163-167).

Although earlier work of W. C. Price had suggested that transmission may be possible by high-pressure injection of

buffered sap, no method of experimentally transmitting the causal agent was known. Although the presence of the RNA could be used as a diagnostic marker of infection, the implication of a viroid in the etiology of cadang-cadang was achieved first by demonstrating the similarity of the disease-associated ccRNA to viroids, and then by demonstrating its infectivity.

With the purification of the ccRNA, its circularity was demonstrated and a complementary DNA-probe was synthesized. This probe was used to unequivocally identify ccRNA in African oil palm, *Corypha elata*, (*Phytopathology* 70:185-189) and in coconut palms affected by tinangaja disease in Guam (*Phytopathology* 71:1104-1107).

Transmission of the ccRNA to seedlings using unfractionated nucleic acid extracts as inoculum was achieved (*Phytopathology* 67:1211-1216), and the same method of inoculation has been used to confirm that purified ccRNA is infectious and hence a viroid (*unpublished*). Detection of the ccRNA in inoculated seedlings precedes the development of the disease syndrome.

These studies have shown that cadang-cadang disease is caused by a viroid. The mode of spread remains unknown but the availability of a method of purification and inoculation of the ccRNA has allowed work to commence on the search for resistance. The availability of a probe has allowed the search to begin for alternative hosts and vectors. Molecular studies may help give an insight into the mode of viroid replication and pathogenesis.

John W. Randles was born in Adelaide, South Australia, August 25, 1938. He earned B.Ag.Sc. (1961) and M.Ag.Sc. (1965) degrees at the University of Adelaide and the Ph.D. degree (1969) at the University of Auckland in New Zealand. From 1961 to 1966 he was a research scientist with the South Australian Department of Agriculture, and since 1969 he has been lecturer and senior lecturer in Plant Pathology (Virology) at the Waite Agricultural Research Institute, The University of Adelaide.

## CIBA-Geigy Award

Sponsored by the CIBA-Geigy Corporation, this award is given to individual plant pathologists who have made significant recent 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.

### John M. Duniway



**John M. Duniway** is awarded the CIBA-Geigy Award for his pioneering research on the water relations of plant-pathogenic fungi in soil and of host-pathogen interactions. The ingenuity and originality of his approach to research and his high standard of excellence have quickly placed him as a pioneer and leader in research on the water relations of plant-pathogen interactions. He has developed new or improved research techniques that have

become essential for the reliable, quantitative study of effects of soil water on pathogens, plants, and disease development. He has greatly advanced our knowledge of *Phytophthora* spp., an important but poorly understood group of pathogens, and has stimulated others to test and expand his findings. His accomplishments have laid the groundwork for renewed research efforts by many scientists involved in the study of soilborne plant pathogens.

Dr. Duniway's studies on *Phytophthora* root rot of safflower exemplify the importance of his work. For many years the relationship between water stress and root rot in field-grown safflower had been observed, but not understood. In a series of thorough and precise experiments, Dr. Duniway clearly showed that water stress predisposed safflower plants to infection, and was even capable of breaking down genetic resistance. Outside of plant pathology, his research has been recognized by

scientists in the fields of plant physiology and soil science. Furthermore, plant breeders in the United States and other continents are using the results of his research in their efforts to detect and deploy stable genetic resistance.

Dr. Duniway's interest in epidemiology also led him to examine the role of soil moisture on the behavior of species of *Phytophthora* in soil. His leadership is evident here, too, as he developed some of the first and most complete work on the effects of soil moisture on sporangium formation and germination, as well as zoospore behavior and survival.

Dr. Duniway was born and raised in San Francisco, CA. He attended Carlton College in Northfield, MN, where he received

a B.A. degree in biology in 1964. He then entered graduate school at the University of Wisconsin, Madison, where he earned the Ph.D. degree in 1969. His Ph.D. research was done under the direction of R. D. Durbin and involved the water relations of bean plants infected with *Uromyces phaseoli*. Upon completing his Ph.D., Dr. Duniway spent one year at the Australian National University on an NSF Postdoctoral Fellowship, where he worked with R. O. Slatyer on the water relations of Fusarium wilt in tomato. In 1971, Dr. Duniway joined the faculty at the University of California, Davis, where he is presently a professor.