

Eugene L. Sharp, 1926 to 1994

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Professor Emeritus Eugene L. "Gene" Sharp passed away at his home in Spokane, WA, on 9 June 1994. He was born in Spokane in 1926 and studied botany at the University of Idaho, Moscow, graduating with a B. S. degree in 1949. He then transferred to Iowa State University, Ames and received M.S. (1951) and Ph.D. degrees in plant pathology (1953) with a minor in plant breeding. His thesis research on storage of *Puccinia coronata* urediniospores

led to the development of a lyophilization process that is used worldwide to preserve *Puccinia* collections. After graduating, Gene spent 3 years in the U.S. Army Chemical Corps as a research plant pathologist stationed at Fort Detrick, MD. In 1957, Gene traveled west to join the faculty of Montana State College in Bozeman working in the area of cereal diseases, with particular emphasis on wheat rusts.

Dr. Sharp made several significant discoveries involving wheat stripe rust caused by *Puccinia striiformis*. While studying pre- and postinoculation temperatures as they affect the disease reaction of wheat to *P. striiformis*, he determined that temperature-sensitive factors were operating in wheat. These factors were minor, additive, nonspecific genes of the "horizontal" type. His pioneer work in understanding the genetics of durable resistance has been of fundamental importance to those working to develop plants with this type of resistance.

One outcome of Dr. Sharp's research was the development, in conjunction with winter wheat breeders at Montana State University, of winter wheat cultivars Crest and Winridge, which carry a number of genes of "minor effect" whose main value is their durability or long life. These cultivars were subsequently grown all over the world in the International Stripe Rust Nurseries where they retained their resistance. Later, Krupinsky and Sharp showed that minor effect genes can be found in many of our old susceptible wheat cultivars and that they can be accumulated or pyramided by selection for resistance under environmental conditions that favor the expression of minor genes.

An interesting and unusual finding involved factors affecting the germination of urediniospores of *P. striiformis*. Noticing that spores would not germinate during short days with low external temperature and wind velocity during the Montana winter, Dr. Sharp was unable to determine the factor influencing spore germination until he conducted experiments at the Naval Research facilities in Point Barrow, AK. Doing simultaneous germination

tests at both Point Barrow and Bozeman, Gene found that the spores would germinate well at Point Barrow while at the same time an aliquot of these spores would not germinate in Bozeman. Ultimately, Dr. Sharp was able to explain this difference in germination by the presence of large air ions in Bozeman that adversely affected spore germination. Such ions were not found in the pristine environment at Point Barrow. The large air ions were associated with air pollution from car exhausts in Bozeman. During periods of low temperature and wind velocity in the winter, air inversions develop in the Bozeman area, trapping air pollutants, including large air ions, that invade the laboratory and produce conditions that adversely affect spore germination. Even today the quality of air in Bozeman is designated each day based on a scale related to the germination potential of stripe rust urediniospores.

During the last decade of Dr. Sharp's career, he devoted considerable effort to international agricultural studies as principal investigator of a grant from the U.S. Agency for International Development. The main purpose of his studies was to produce adapted disease-resistant barleys for North Africa and the Middle East. He pioneered the use of male-sterile lines of barley in a recurrent selection scheme to develop germ plasm with additive, nonspecific resistance to diseases such as barley scald, net blotch, leaf rust, and powdery mildew. Germ plasm released by Dr. Sharp is now available to cereal breeders who are working to produce cultivars with nonspecific resistance to many pathogens.

Dr. Sharp was active professionally in The American Phytopathological Society, serving on the Genetics and Epidemiology committees and the editorial board of *Phytopathology* as an associate editor. Dr. Sharp served as head of the Plant Pathology Department at Montana State University from the formation of the department in 1972 until his retirement in 1987.

Dr. Sharp's international research reputation earned him a von Humboldt Senior Scientist Award in 1975, allowing him to spend a year in Braunschweig, Germany, working with the late Dr. E. Fuchs. He also was honored by the faculty of Montana State University who gave him the Faculty Research Award from Sigma Xi in 1970. The American Phytopathological Society made Gene a Fellow of the Society in 1984.

Dr. Sharp is survived by his wife Maisie, their four children and four grandchildren. Gene will be missed by all who appreciated his great knowledge of cereal diseases and his quiet, humble way of working with producers and scientists alike. His students and colleagues around the world mourn his passing, and through them he will be long remembered.