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Kenneth J. Frey
Award for Distinguished Service to Oat Improvement



Dr. Kenneth J. Frey, Charles F. Curtiss Distinguished Professor of Agriculture at Iowa State University, was born in Charlotte, Michigan in 1923, and was raised on a farm in that state. He attended Michigan State University, where he was awarded the B.S. degree in Field Crops in 1944, and the M.S. in Crop Breeding in 1945. He obtained the Ph.D. degree at Iowa State University in 1948, and then served on the staff of the Department of Farm Crops at Michigan State University until 1953. In 1953, he moved to Iowa State University to take over the oat breeding program and to teach plant breeding in the Agronomy Department. Since then he has served at Iowa State, where he has compiled a truly outstanding record of accomplishment. Most of this accomplishment clearly and directly qualified as distinguished service to oat improvement.

Foremost among Dr. Frey's contributions to oats as a crop species is the list of over 200 publications that he has authored or co-authored with students and colleagues. The great majority of these have dealt directly with basic or applied aspects of genetics of oats. Taken together they constitute a very important addition to the fund of knowledge that is available for use in oat improvement.

Dr. Frey was among the first to recognize the potential of artificial mutagenesis as a source of useful variation in oats. The first work he published in this area, in the early 1950's was well ahead of the crowd. Some of this early work involved important oat

pathogens, and his recognition of the potential of field resistance was again well ahead of the then current thinking that monogenic resistance would solve all the problems.

The quality of oat grain, especially in terms of protein and amino acid content, has been a topic of great interest to plant breeders for the past few decades. Dr. Frey, starting very early in his career, has made numerous important contributions to our knowledge of this area. The wild oat *Avena sterilis* is now recognized as a prime source of disease resistance, grain quality, and many other desirable traits in oats. Dr. Frey's work with this species has led to the publication of many individual studies on the theoretical or practical utilization of genes carried by *A. sterilis*.

Much of Dr. Frey's work, including most of the work with disease resistance, grain quality, and agronomic traits could be broadly, but conveniently, categorized as research on oat breeding. In addition to the items mentioned above, this includes his work in developing the microplot technique into a practical tool for evaluating quantitative traits, including yield. Widespread use of microplots, as compared with larger field plots, has significantly furthered progress in oat research because of the cost effectiveness of the microplots.

Dr. Frey, in cooperation with his colleagues, was the first to test the theory of the use of multilines for controlling the cereal rust diseases. In addition, his work in this area has included further development of theory and the mechanics of producing multilines, and finally, the release of successful multiline oat varieties. Additional multiline varieties are currently being developed.

Dr. Frey has had several important administrative assignments that directly relate to oats, and that have significantly contributed to the well being of oats as a crop species. For example, he has served on the Oat Legislative Subcommittee and on the board of directors of the Oat Milling Association. He has been chairman of both the NC Oat Technical Committee and the National Oat Conference, and was instrumental in establishing the International Oat Workshop series.

A summary of Dr. Frey's contributions to oat improvement should also include his work in applied plant breeding. In the course of his career, he and his colleagues have released 17 oat varieties for the use of midwestern farmers. Others are in advanced stages of development.

It is not possible to present a short account of Dr. Frey's service to oats as a crop species without mentioning his outstanding overall career accomplishments. The reputation he enjoys has resulted in a very long list of invitations to present lectures, seminars, and symposia all over the U.S. and in many foreign countries. He has drawn at least part of the subject matter for many of these from his work with oats, thereby giving the crop a significantly greater visibility. He has also made great contributions in terms of service to professional societies. His presidency of both the Crop Science Society of America and the American Society of Agronomy top a long list of such services. Oats, as a crop species, has benefited indirectly, but significantly, from this

phase of Dr. Frey's career.