THE CONTRIBUTIONS OF FERDINAND F. DICKE

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ABSTRACT

Ferdinand F. Dicke's contributions to entomology have spanned more than sixty years. Mr. Dicke has made significant contributions to entomology in the areas of host plant resistance, biology and ecology, disease transmission by insects, chemical and biological control, and methods for breeding for plant resistance to insects. Mr. Dicke's long and distinguished career in the field of entomology is truly outstanding and worthy of our recognition.

RESUMEN

Por más de sesenta años Ferdinand F. Dicke ha contribuido a la Entomología. El señor Dicke ha hecho contribuciones significantes en las áreas de resistencia de plantas hospederas, en la biología y ecología, en la transmisión de enfermedades por insectos, en el control químico y biológico, y en el fitomejoramiento de plantas resistentes a insectos. Mr. Dicke ha tenido una larga y distinguida carrera en el campo entomológico que ha sido sobresalitente y digna de nuesto reconocimiento.

Mr. Ferdinand F. Dicke was born at New Bremen, Ohio, August 25, 1899. He graduated from New Bremen High School in 1917. He received a B. Sc. degree from Ohio State University in 1927 with a major in entomology and botany. From 1938 through 1942, he attended graduate school (at night) at George Washington University, majoring in plant physiology and mycology.

Mr. Dicke's research experience with the United States Department of Agriculture began at Monroe, Michigan (1927-1929) where he worked on chemical control, cultural control, and varietal resistance of the European corn borer. From 1930-1933 he worked on biology and ecology and chemical control of the corn earworm at Charlottesville, Virginia.

He worked at Arlington, Virginia, and Beltsville, Maryland, on several research problems from 1933-1942. Research on the corn earworm included biology and ecology and varietal resistance of dent corn, disease transmission by insects, vectors and transmission of Stewart's bacterial wilt in corn, biology of corn flea beetles, potato leafhopper on alfalfa and peanuts, entomogenous fungi, sericulture, and collection of varieties of silkworms in the U.S.

Mr. Dicke worked on varietal resistance to the European corn borer at Toledo, Ohio from 1942-1950. He was project leader in the development of corn genotypes for resistance to the European corn borer at Ankeny, Iowa from 1950-1963. During this period he was also Professor, Department of Zoology and Entomology at Iowa State University and provided counsel and direction for many graduate students. On July 6, 1963 (after 37 years of research) he retired from USDA and started a 20-year career with Pioneer Hi-Bred International, Inc., Johnston, Iowa. He served as a consultant on insect and diseases in Pioneer's domestic and overseas research program to improve varieties of corn, sorghum, soybeans, alfalfa, cotton, wheat, and sunflowers. His major activities with Pioneer consisted of evaluating crop germplasm for insect and disease resistance.

From 1984 to the present, he has been Research Collaborator with USDA-ARS-Iowa State University at Ankeny, Iowa.

During Mr. Dicke's service with the U. S. Department of Agriculture he made significant research contributions in the areas of host plant resistance to insects, biology and ecology, disease transmission by insects, chemical control, biological control, and methods of breeding for plant resistance to insects. His primary research has been on cereal and forage crop insects. Some specific accomplishments are as follows: (1) Early contributions on the effectiveness and phytotoxicity of insecticides when used against the European corn borer, and reactions of the corn borer to a variety of host plants. (2) Biology of the wheat jointworm with studies on the development of gall tissue. (3) New interpretations on the seasonal populations of the corn earworm and factors affecting winter survival. (4) Identification and evaluation of relative resistance of inbred lines of corn against the corn earworm. Several of the lines found to be resistant are now used in hybrids and are also used in developing synthetic varieties. (5) Identification of new sources of resistance against the European corn borer through the development of new resistant inbred lines from single crosses that had susceptible lines in their parentage, demonstrating transfer and intensification of resistance; several of the lines have been released by the Iowa and Minnesota stations and are now used in commercial hybrids approved on a regional basis. He has made important contributions to an understanding of the genetics of resistance. (6) Important contributions to the large scale production of corn borer egg masses in the laboratory and their efficient use for artificially infesting corn in resistance and other experimental work. (7) Detailed studies on the biology of the corn borer on susceptible and resistant strains of corn leading to the development of important time-saving visual methods for identifying and evaluating resistance before pollination allowing effective selection in segregating plant populations and greatly reducing pollination work and progeny testing. These methods have significantly enhanced the studies on the genetics of resistance and breeding for resistance. (8) Important contributions in a biological and statistical study demonstrating a highly significant correlation between visual numerical leaf damage ratings, sheath and midrib lesions, stalk cavities, and surviving larvae and the use of these criteria in connection with corn breeding as well as with chemical, biological and other research. This work has brought about significant savings in field work and has permitted an increase in the scope of the program.

Mr. Dicke received the U. S. Department of Agriculture Superior Service Award on June 5, 1956, while employed at the European Corn Borer Research Laboratory, USDA-ARS, Ankeny, IA. This award was given for his outstanding contributions in the field of agriculture, especially in connection with his work on corn borer resistant varieties of corn. He was featured in 1957 in a Northrup-King and Co., Minneapolis, MN, publication because of his accomplishments in developing corns that are resistant to the European corn borer. He received the Alumni Member Award of Merit from Gamma Sigma Delta, Iowa Beta Chapter, April 1975. On March 24, 1982, he received the North Central Branch ESA Award of Merit. The CIMMYT Maize Program and the HPR Symposium participants dedicated the International Symposium on Methodologies for Developing Resistance to Maize Insects (March 16-20, 1987) to Mr. Dicke in recognition of his long and distinguished career in the field.