

## ***This Week's Citation Classic***

**Hooker A L, Smith D R, Lim S M & Beckett J B.** Reaction of corn seedlings with male-sterile cytoplasm to *Helminthosporium maydis*. *Plant Dis. Rep.* **54**:708-12, 1970. [Dept. Plant Pathology, Univ. Illinois, Urbana-Champaign, IL and Crops Res. Div., Agricultural Res. Serv., USDA, Univ. Missouri, Columbia, MO]

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**This paper presents clear evidence for the role of plant cytoplasm in conditioning reaction to an infectious disease in corn. This is a rare event. The role of a pathotoxin and its relationship to disease was demonstrated. The suggestion that mitochondrial membranes react with the pathotoxin was offered as an explanation of disease susceptibility. This has subsequently been confirmed. Resistant plants showed little injury when treated with the pathotoxin. [The *SCI*<sup>®</sup> indicates that this paper has been cited over 120 times since 1970.]**

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"In 1970, the southern leaf blight disease of corn, caused by *Helminthosporium maydis* Race T, resulted in the greatest loss in a single crop in a single country in a single year of any plant disease in recorded history. The epidemic resulted because a new biotype of *H. maydis* with unique virulence to cms-T cytoplasm had developed, weather conditions were favorable for disease, and corn hybrids produced through the use of cms-T cytoplasm for male-sterility were widely grown in the US. The epidemic extended from Florida to Minnesota and attracted worldwide attention. The disease resulted in a National Academy of Sciences study on genetic vulnerability of major crops, the establishment of a National Plant Genetics Board, and a series of special research grants.

"At the time of the epidemic I was a professor of plant pathology and plant genetics at the University of Illinois at Urbana. The research at our laboratory was a broad pro-

gram that included all corn diseases of importance in Illinois.

"The study was prompted because I found this plant disease to be 'out of place' in September 1969. After observing the disease and noting its uniqueness, I collected samples of the fungus from infected plants for subsequent study, organized the research, and actively participated in the studies described in the paper cited. I am deeply indebted to my coauthors of this paper. We were a close-knit research group put together with funds from various sources. The research reported was completed in March 1970, and at that time we had no idea that the disease would develop in epidemic proportions that year. Fortunately, we had an extensive field program of research<sup>12</sup> which clearly confirmed our first publication. The disease was brought under complete control in two years. This is a remarkable demonstration of the advantages the American public has because we as a country have a strong private seed industry.

"This short paper on preliminary research is highly cited because we worked on several facets of this important disease and we established a variety of 'firsts' that included all of the essential information needed to control the disease.

"Largely because of my work with the southern leaf blight disease of corn I was the recipient of a Commendation (Senate Resolution No. 176), Seventy-seventh General Assembly Senate, State of Illinois, for service to farmers. This research and work on other corn diseases and their control through genetic resistance contributed to my being a 1973 Paul A. Funk Recognition Award recipient, College of Agriculture, University of Illinois, for contributions to agriculture through research, teaching, and public service. I have also been elected Fellow of the American Society of Agronomy, Fellow of the American Phytopathological Society, and Fellow of the American Association for the Advancement of Science."

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1. **Hooker A L.** Southern leaf blight of corn—present status and future prospects. *J. Environ. Qual.* **1**:244-9, 1972.

2. .... Cytoplasmic susceptibility in plant disease. *Annu. Rev. Phytopathol.* **12**:167-79, 1974.