The Reporting of Estimated Plant Disease Losses

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This issue of Plant Disease contains a paper on estimates of soybean disease losses in the United States in 1982 (see page 1394). This paper represents a departure from the standard research paper found in Plant Disease. Previous efforts have been made to publish crop disease loss estimates. The 1982 American Phytopathological Society meeting included a symposium on "Estimated Yield Reduction of Major Food Crops of the World." Volume 1 of the Chemical Rubber Company's Handbook of Pest Management in Agriculture contains a chapter on plant disease losses and a table entitled "Estimation of Percentage Losses Due to Diseases of Selected Major Field Crops in the U.S." covering 1951-1960. These noteworthy efforts serve a good cause, but such information must continue. Publication of the paper on soybean disease loss estimates in a journal that publishes research papers is such an effort. Because the paper represents both an idea and an opinion based on observations of qualified plant pathologists, it is within the editorial policy of Plant Disease.

In a traditional sense, many good and valid points can be made opposing publication of such a paper. The method of observation likely varies from observer to observer. The loss figures are only estimates. Yet an equally strong argument can be made for publication. Disease loss figures covering a large area are needed, and these estimates, however varied, represent a start. To improve a system, a start has to be made somewhere.

In a sense, we are admittedly practicing the art before we have properly studied the science. Historically, many fields of endeavor started in such a fashion. Electricity was a poorly understood tool used in parlor games until Benjamin Franklin and others began to organize the phenomenon into a discipline with defined principles through controlled experimentation. The Wright brothers did not fully understand why their airplane flew at Kitty Hawk. Despite years of intensive research into the splitting of the atom, some scientists feared the world would be blown to bits by the first atomic bomb. I suspect it will take a relatively long time to devise a method for gathering uniform observations into data that can be published as totally reliable plant disease losses for any political or geographic area. The process will be evolutionary, and researchers must learn to walk before they can run. We are just now beginning to crawl.

Progress in ascertaining disease losses will likely be in jerks and jolts, responding to the whims and wishes of agriculture with all its vagaries. As E. C. Stakman wrote, "For better or for worse, plant pathology had its genesis in fields and granaries more than in halls of ivy." If this kind of work could be accomplished solely in laboratories and field plots, progress would probably be faster and smoother. Perhaps someday a standard formula or a computer program will be devised to transpose losses from a small area to a large one. Meantime, we are attempting a beginning.

When reliable disease losses for a crop can be confidently recited from published information, government agencies can accurately regulate fungicide usage and research priorities. Universities can appropriate resources toward solving the most critical problems, and private enterprise can examine crop management practices and explore pesticide development in areas that assure profitability. Perhaps in 2058, plant pathologists will be able to say that 15,123,421 bushels of soybeans were lost to the soybean cyst nematode in the United States. As Norman Borlaug wrote, "Our research must be good, but it must be good for something."