Plenary Lectures

PL-1

Perspective: Thirty-Eight Years in Plant Pathology (1966-2004)

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My adventure in the United States began when graduate studies began at Mississippi State University in January, 1961. My goal for coming to the United States was to pursue graduate studies in plant genetics and breeding and return home to Korea with a Ph.D. degree. Upon the completion of my Ph.D. degree at Michigan State University in 1966, I had an opportunity to join the Department of Plant Pathology at the University of Illinois and work on the genetics of disease resistance in corn. I took the opportunity and it opened the door for my career as a plant pathologist in the United States. One thing leads to another as more opportunities arose and here I am approaching the end of my career in the United States. For the past thirty-eight years, a lot of changes have occurred in many aspects of plant pathology and that has impacted my activities in research, teaching, extension, administration and outreach. Traditionally, plant pathology is the study of pathogens and environmental conditions that cause disease in plants and the methods of preventing or controlling disease. Other disciplines such as botany, mycology, microbiology, genetics, biochemistry, statistics, agronomy, meteorology, etc. provide the basis for studying plant pathology. Hence, plant pathology departments at most of the Land Grant Universities in the United States have focused their efforts on research and graduate education without having undergraduate programs. All their graduate students are recruited from other disciplines such as biology, agronomy and horticulture. As we go through a period of dynamic change in modern agriculture from the influence of intense economic, technical, political, and social pressure, the impact on plant pathology is great, causing dramatic changes in trends of plant pathology. Furthermore, the increased emphasis on molecular biology/ biotechnology in plant pathology accelerates the departure from traditional or classical plant pathology where there is already a serious lack in field trained plant pathologists. Consequently, classical plant pathology is diminishing with the elimination of departments or merger with other disciplines. We are at a critical crossroad where we must meet the challenge of sustaining a balance between conventional and non-conventional plant pathology. Plant diseases have had a major impact on mankind. Diseases such as ergotism and late blight of potato have led to the deaths of thousands of people. Diseases such as coffee rust have changed the sociocultural behavior of people. Diseases such as southern corn leaf blight, chestnut blight, and dogwood anthracnose have caused millions of dollars in damage. As the history of mankind unfolds, threats of introducing new diseases in crop production areas, regions or countries exist, such as southern soybean rust which has the potential to be introduced in the United States. Classical plant pathology, studying the dynamics of pathogen, host plant and environment, is an essential basis of managing plant diseases in production fields and must be sustained. Therefore, we must continue to train field oriented plant pathologists.

Although I've been an invited speaker at numerous national and international meetings of professional Korean societies, universities and research institutes during the past years, it is especially gratifying for me to present my perspective on thirty-eight years as a plant pathologist in the United States at the 20th Annual Meeting of the Korean Society of Plant Pathology. I am honored and deeply appreciate this opportunity.

PL-2

The Impact of Genomics on Plant Pathology: Looking to the Future

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Major advances in genomics and computational capacities are providing plant pathologists with opportunities to study, develop and apply novel solutions to intractable disease problems. Among these advances are the release of complete genome information for increasing numbers of plant pathogenic microorganisms as well as two model plant species (rice and Arabidopsis), and, the development of high-throughput technologies for comprehensive analysis and validation of gene function. The complete or nearly complete genome sequences have improved the resolution of comparative genome studies within and among species which are yielding helpful insights into the evolutionary relationships of genes critical to virulence in pathogens and disease resistance in host plants. Comprehensive data from functional genomic analyses are providing unprecedented clues into how pathogens exploit plants, and how plants respond to pathogens or to abiotic stresses. With all of these huge sets of data rapidly accumulating, a crucial