

National Issues in Plant Pathology: A View from Washington

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At a time of general depression in the U.S. agricultural economy, declining undergraduate enrollments in colleges of agriculture, increasing costs in educating and training students, and escalating costs in conducting research, U.S. agriculture is moving into the high-technology arena. The complexity of this arena is mirrored in the growth of subspecialties within most of our disciplines. We have an important stake in such major areas as the new biotechnology, biological impact assessment, biological control, integrated pest management, crop loss assessment, and job markets.

The new biotechnology. After initial extreme reactions, universities and other organizations apparently are responding in a positive way to the new biotechnology initiative. Plant pathology and related disciplines stand as core areas to exploit the extended knowledge base leading to technological breakthroughs. We need to make sure that administrators fully appreciate the critical roles of those who work with the host plant and microorganisms affecting the health of our crops and forests in research conducted under the rubric of biotechnology.

Biological impact assessment. The National Association of State Universities and Land-Grant Colleges (NASULGC) was instrumental in securing broad-based support for a national program to assess the environmental impacts of organisms that have been modified through recombinant DNA techniques. On 26 June 1986, the White House Office of Science and Technology Policy published in the *Federal Register* an announcement of policy and notice for public comment for a coordinated framework for regulating biotechnology. There are great implications for the regulation of science. Science leaders such as John Fulkerson of our agency continue to work for consolidating the scientific community to assess impacts of transformed organisms on the environment and to advise policymakers of levels of risk in releasing these organisms. Momentum is increasing in the legislative branch of government, and a flood of proposed legislation on engineered organisms and other products is likely. New laws will have an impact on development of biological and chemical pest control agents, technologies to detect and monitor transformed biota, methodologies to measure crop losses, even the basic studies related to research in quantitative epidemiology. Plant pathologists need to be better informed about the "politics of science" and to take a more active role in dialogue on the issues before new laws are written.

Biological control. Research on the use of biological agents and their products to control plant diseases is in progress in virtually every department of plant pathology in land-grant universities. Although biological control of insect pests has been more visible in the scientific and lay community, substantial progress has been made in research on biocontrol of

plant pathogens. Plant pathologists are cooperating with entomologists and weed scientists in a new national interdisciplinary biological control program that is promoting accelerated application of traditional biocontrol technology while organizing a "bold new thrust" in research efforts to fully utilize biotechnology approaches.

Integrated pest management. A national IPM program based on efforts in the four state agricultural station regions has been developed by NASULGC and outlined in a report entitled "National Plan for Integrated Pest Management: Research, Education and Technology Transfer." The plan provides for a national IPM framework involving personnel in the land-grant universities and the USDA to cooperate in implementing optimal systems for managing crop and livestock pests. The four regions have identified priority research areas for selected commodities and initiated a process for handling proposals for competitive grant funding. Currently, 157 projects from 42 states are funded on alfalfa, potatoes, range systems, small grains, tree fruits, corn, livestock, dairy forage, cotton, and soybeans.

There is much debate over the adequacy and potential of current concepts of IPM for U.S. agriculture's needs. Student enrollments in pest management curricula have not materialized as hoped. Some leaders argue for a more holistic approach, more compatible with production realities on the farm. Others stress the urgency of bringing the plant health concept to fruition, building on the contributions of IPM. In the midst of this debate is a hesitancy to reach out in proactive thinking, to envisage the kind of cropping systems that will exist early in the 21st century and then to build cross-disciplinary strategies to meet anticipated needs.

Crop loss assessment. Appeals for more and better information on the damage caused by plant pathogens and other stresses have gone unanswered. Pilot research projects sponsored by the Cooperative State Research Service demonstrated the possibilities for developing multiple stress crop models for interpreting information on crop loss and yield loss, but the support for a national initiative has not been forthcoming. A considerable amount of current research deals with aspects of crop and yield loss as individual efforts. We need to support and expand those activities as a national initiative.

Job markets. The declining undergraduate student enrollments in U.S. colleges of agriculture reflect the general downturn in our agricultural economy. According to a recent study (Coulter, K. J., et al. 1986. Employment opportunities for college graduates in the food and agricultural sciences. Texas A&M University EIS 86-174 7/86-10M), over the next 5 years the number of graduates with food and agricultural expertise to fill important professional positions will be insufficient. More than 48,000 job openings are projected annually for new graduates with strengths in agriculture, natural resources, veterinary medicine, and allied fields, but fewer than 44,000 graduates are anticipated each year, amounting to a net 10% shortfall. Scientists, engineers, managers, sales representatives, and marketing specialists will account for three-fourths of the total employment openings for new college graduates. Today is still an exciting time to be involved in the food and agricultural enterprises of our nation. Our professional society and colleague organizations should play active roles in launching a national public relations campaign, cooperating with our universities and public school systems in every state.