



## Plant Pathology's Role in the Safety of the American Food Supply

► **Background:** Contaminated fresh produce causes more human illness and outbreaks than any other food. Recalls and litigation cost the produce industry millions and impact every industry sector. Increasing pressure is being placed on the government, produce associations, food retailers, and growers to institute improved, science-based food safety standards and audit compliance programs. Passage of the Food Safety and Modernization Act (FSMA) was a first step toward reducing the amount of contaminated produce in the US food supply. Under FSMA, the FDA is required to publish regulations immediately; however, the lack of research in many areas of human pathogen association with fresh produce hinders FDA development of on-farm regulations. Unanswered questions remain as to best management practices, routes of contamination, environmental survival, and interactions between human pathogens and plants.

The more than 5,000 APS members with extensive knowledge of the complex relationships between microbes and plants are valuable scientific resources that can drive discovery and design of effective solutions to microbial contamination of food plants. Plant pathologists study how microbes colonize plants and are dispersed in the environment as well as how plants respond to defend themselves. These are crucial elements for the development of intervention strategies and a balanced program to minimize foodborne illnesses. Utilizing modern plant pathology strategies, plant pathologists have made great strides toward understanding the fundamental biology of human pathogens in association with fresh produce and progress toward reducing agricultural crop contamination.

Potential risk reduction and prevention strategies remain largely empirical as our knowledge about the interactions of food borne pathogens with one another, with plants, with the environment, and with nonpathogenic plant-associated microbes is inadequate. More effective solutions will require the application of emerging research tools and strategies, as well as creative cross-disciplinary research efforts. Small steps toward interagency funding have recently occurred through the "Ecology and Evolution of Infectious Diseases" 2011 program that is a partnership between NSF, NIH, and USDA-NIFA. Although this may provide an opportunity for funding research that will improve the safety of our food supply, the EEID program supports only basic research on the transmission dynamics of infectious diseases and we need research that explores the entire life cycle of human pathogens, especially their association with plants.

► **Solution:** We request increases in research funding for fundamental and practical knowledge of human pathogen-plant interactions. Specifically, we request the following:

- Enhanced funding for the fundamental and applied research related to human pathogens on plants, including focus areas of host-pathogen interactions, pathogen-environment interactions, and pathways to transmission;
- Funding for the development of surrogates or models for studying human pathogens from a systems approach;
- Funding for projects that will enhance our understanding of microbial communities and the microbial ecology and diversity in the soil and rhizosphere; and
- Opportunities for multi-disciplinary, multi-perspective research coordination network for human pathogens on plants.

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