APHIS-PPQ: NEW DETECTION TECHNOLOGIES AND BIOSECURITY

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Our agricultural and plant resources are vulnerable to intentional or unintentional introduction of pest and pathogens. The responsibility for protecting US plant resources lies with APHIS as well as DHS, but also involves many universities, state agencies, and private organizations. Effective detection and identification requires both field-deployable and laboratory-based diagnostics that are rapid, sensitive, and inexpensive. We face significant challenges, however, in meeting our safeguarding mission. Unlike the analogous situation for medical or veterinary diagnostics, we require diagnostics for thousands of pathogens and pests, affecting hundreds of hosts. There are nearly 400 species of pest or pathogen on the USDA-APHIS regulated pest list, and hundreds more that are reportable or actionable. In any given year there can be 10-15 serious plant disease outbreaks affecting major crops in different agricultural regions. At times identification to species is adequate, but frequently we require identification to race, biovar or strain. At times determining geographic origin of an agent is important. We currently use methods based on detection of nucleic acids, immunological methods, and 'classical' methods. Case studies will be presented to illustrate the successes and challenges of integrating sound science, technology, and regulatory policy or actions.

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