Public Policy Update

National Plant Diagnostic Network Five-Year Review: Report of the Review Panel

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What is the NPDN?
The National Plant Diagnostic Network (NPDN) was established by the U.S. Department of Agriculture, Cooperative State Research Education and Extension Service (USDA CSREES) from federal funds in 2002 to fill a major gap in timely, effective, and state-of-the art diagnostic capability for threatening and emerging diseases of concern to the nation's agricultural system. Initial efforts were focused upon establishing five regional hub labs at land-grant universities (LGUs) representing the Northeast, Western, Southern, Great Plains, and North Central regions, which were conceived to address differences in agricultural production systems in the respective regions. The network has rapidly expanded since 2002 to encompass diagnostic clinics at LGUs in all 50 states and Puerto Rico, with partner clinics in two U.S. territories.

The mission of the NPDN is centered upon national agricultural security, being charged with rapid detection, diagnosis, and early communication of outbreaks of high-priority plant pathogens. The network coordinates and communicates with county and state extension agents, state departments of agriculture, and the USDA, Animal and Plant Health Inspection Service, Plant Protection and Quarantine (USDA APHIS PPQ) during outbreaks in implementing its mission. Training of first responders and diagnosticians is an essential component of the NPDN, ensuring that the network is prepared for the scope of its mission in the event of an outbreak.

In January 2007, the NPDN Executive Committee convened a review panel, consisting of professional representatives from major stakeholders and partners of the NPDN, to conduct a critical review of all facets of the NPDN. The Review Panel met and communicated with NPDN representatives, partners, and stakeholders and developed a report that addresses the NPDN mission, scope, accomplishments, and challenges. The report also provides specific recommendations for future improvement of the network. A condensed version of the Executive Summary of the NPDN Five-Year Review Report is presented here for the APS membership. The full Executive Summary is available at www.npdn.org/Library/ViewDocument.pdf?filetype=pdf&DocumentId=6430. Comments and questions should be directed to Panel Chair **Douglas Luster**. The review team believes that the continued development of the NPDN is crucial for the U.S. food and agricultural enterprise.

Diagnostics
The NPDN has brought a renewed emphasis to, and enhancement of, diagnostics at LGUs and has started to provide an infrastructure for the rebuilding of the linkages between the diagnostic laboratories and extension, regulatory agencies, and the broader community of agricultural practitioners. As a result, the NPDN has significantly contributed to the detection and diagnosis for several recent APHIS-listed "select agent" and high-profile pathogen introductions, resulting in the protection of U.S. agricultural systems and in the reduction of damage to producers and natural ecosystems at the national level.

Challenges remain in the development and application of accreditation standards for diagnostic labs to ensure recognition and acceptance of data by states, regulatory agencies, and partners. This issue is being actively addressed by the NPDN leadership and diagnosticians, who are working together with USDA APHIS and USDA CSREES toward a National Plant Protection Laboratory Accreditation Program. The NPDN is still developing procedures for the event of a national-scale outbreak and associated sample surge. The panel made appropriate recommendations to deal with these issues of workload and surge capacity.

Education and Training
A vast network of first responders has been developed and is rapidly expanding down to the local level, fulfilling one of the primary visions of the network. Training is a primary focus of the network and is accomplished at the national, regional, and state level with effectiveness, applying a "train-the-trainer" philosophy. Online scenario-based training has been implemented with online access, and standard operating procedures are in place on the Internet for open access.

Information Technology
The NPDN has achieved one of the primary goals of the program in the creation and implementation of a national diagnostic database. The national database promises to be an important tool in rapid response. Significant challenges continue to face the network in developing the NPDN national plant pathogen and pest databases into a robust national plant health database system capable of recording surveillance, detection, and diagnostic information and of delivering appropriate information to agencies and partners for use in rapid response to, and recovery from, harmful pathogen and pest introductions. The review team recommended a full-time chief information officer to coordinate information technology at the national and regional levels. Data access issues need to be clarified, as well as uniformity of reporting of findings to appropriate authorities.

Governance and Funding
An effective governance and operational structure is in place at the regional and national levels. Competent, energetic regional coordinators have developed a true spirit of "teamwork" both within and across the regions and are also working toward improving working relationships with respective state departments of agriculture and appropriate USDA personnel.

The review panel strongly recommended the establishment of a broad-based NPDN Advisory Council at both the national and regional levels to include representatives from the private sector, state/county extension, experiment station/research faculty, certified crop advisors (CCAs), state/federal regulatory agencies, and National Plant Board affiliates. An Advisory Council representative of the members, stakeholders, and partners will help the network to address challenges in surge capacity, information sharing, resource management, and strategic planning for the future structure, operations, and funding.

Partnerships
Effective and complex partnerships are established and illustrate how far the network has progressed. The NPDN has profited from a commitment to forging strong partnerships and providing training for CCAs, pest control advisors, county extension staff, and other first responders. Most prominently, a solid foundation for operating NPDN partnerships exists with the Integrated Pest Management Center Network, with which the NPDN has formed formal partnerships in several regions. The suc-

cesses of the Soybean Rust Information System, developed in partnerships with the USDA, state departments of agriculture, industry partners, and LGUs, has been expanded in the development of the Integrated Pest Management Pest Information Platform for Extension and Education, a sentinel system and data management/decision tool that will serve as a model for partnership between the NPDN and most, if not all, interested federal, state, and private interests.

Recent "select agent" incidents, such as the arrival of soybean rust and *Ralstonia solanacearum*, have provided an opportunity for extension personnel, CCAs, state regulators, and diagnostic clinicians to exercise incident command system maneuvers and challenge existing communication and diagnostic systems. The need to develop surge capacity for soybean rust, *R. solanacearum*, and *Phytophthora ramorum* has encouraged critical working relationships between scientists and administration with the diagnostic labs, state plant health directors, state plant regulatory officials, and APHIS PPQ (Center for Plant Health Science and Technology and Plant Pest Diagnostics Service units). However, a greater level of ongoing interaction and communication is necessary to tighten the safeguarding safety net and assure that responses are rapid and accurate. The diagnostic/education/regulatory partnership recognizes the importance of business confidentiality, diagnostic challenges, and the need to minimize potential threats through quarantines and other restrictions. The standing partnerships of the NPDN could become more effective by including an industry component.

Public Relations and Outreach

The NPDN has engaged in structured public relations efforts since its inception and has established an active Public Relations Committee. Efforts have included the development of a variety of promotional print and electronic materials, highlighting national and regional activities, laboratory capacity, and disease-specific information. National and regional newsletters, brochures, and websites have been effectively deployed to distribute information. The NPDN websites provide quality information on new disease issues and outbreaks in a user-friendly interface (www.NPDN.org). State, regional, and national NPDN members still need to identify and engage new audiences, while sustaining the interest of existing partners and stakeholders. A top priority must be to further educate commodity groups, private industry, and other plant industry stakeholders on the mission, scope, and activities of the NPDN and to engage them as partners.

Integration with Research

The role of the NPDN is not to conduct research, per se. However, consistent with the land-grant mission of translating research to practice and of providing feedback from stakeholders to the research enterprise, the NPDN is poised to play a central role in defining data gaps and prioritizing research needs to fill those gaps. For example, the NPDN has developed formal relationships with Integrated Pest Management Pest Information Platform for Extension and Education (IPM-PIPE) for analysis of NPDN diagnostic data on soybean rust and the soybean aphid. These relationships serve as outstanding models for the relationship between diagnostics and research.

Pathway to Future Success

The review team was very favorably impressed with the progress made in all facets of the NPDN's national, regional, and state infrastructure, human resources, and technology in the short span of 5 years, with a relatively modest national budget. The NPDN is still in its infancy and has much to do before becoming a fully mature, functioning distributed system of accredited laboratories.

The NPDN benefits as a network largely because of the dedication and efforts of the NPDN leadership and because the diagnosticians at the core of the network actively participate, contribute, and feed back their ideas and vision to the leadership. This was particularly evident at the Five-Year Review Meeting in Orlando, FL, in January 2007, where members, partners, and federal agency representatives held an open discussion on all of the opportunities and challenges ahead. (See www.plantmanagementnetwork.org/proceedings/npdn/2007/) Much of the output from that meeting serves as the core of this review document and should serve as the basis for future development and refinement of the network and its associated systems, partnerships, and structure. ■

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