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NATIONAL PLANT DIAGNOSTIC NETWORK: PROTECTING AMERICA'S AGRICULTURE, THE ROLE OF COUNTY-BASED COOPERATIVE EXTENSION

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As everyone is aware, following the attacks on September 11, 2001, America's attention and resources were refocused on homeland security. While emphasizing the security of structures such as buildings, dams, power plants and bridges, Congress also recognized the vulnerability of our agriculture industry. On June 12, 2002, the President signed into law the *Agricultural Bioterrorism Protection Act of 2002*. The Act covers both animal and plant production and directed the Secretary of Agriculture to develop a network linking plant and animal disease diagnostic facilities across the country. The Cooperative State Research, Education, and Extension Service (CSREES) established the Animal & Plant Disease and Pest Surveillance & Detection Network. The National Plant Diagnostic Network (NPDN) will focus on the plant disease and pest aspects of the program.

According to the Network's website (www.npdn.org), its mission is:

"...to enhance national agricultural security by quickly detecting introduced pests and pathogens. This will be achieved by creating a functional nationwide network of public agricultural institutions with a cohesive, distributed system to quickly detect deliberately introduced, high consequence, biological pests and pathogens into our agricultural and natural ecosystems by providing means for quick identifications and establishing protocols for immediate reporting to appropriate responders and decision makers. The network will allow Land Grant University

diagnosticians and faculty, State Regulatory personnel, and first detectors to efficiently communicate information, images, and methods of detection throughout the system in a timely manner.”

The Network

The Network is comprised of Land Grant University plant disease and pest diagnostic facilities across the United States. Lead universities have been selected and designated as Regional Centers to represent five regions across the country. These Centers are located at Cornell University (Northeastern region), Michigan State University (North Central region), Kansas State University (Great Plains region), University of Florida at Gainesville (Southern region), and University of California at Davis (Western region).



The National Agricultural Pest Information System (NAPIS), located at Purdue University, has been designated as the central repository for archiving selected data collected from the regions. The establishment of the Network will provide the means necessary for ensuring that all participating Land Grant University diagnostic facilities are alerted to possible outbreaks and introductions, and are technologically equipped to rapidly detect and identify pests and pathogens.

California’s diverse agricultural enterprise falls within the jurisdiction of the Western Plant Diagnostic Network, coordinated by Dr. Richard Bostock, Chair of the Department of Plant Pathology, UC Davis. The Western Plant Diagnostic Network (WPDN) coordinates data gathering, diagnostic collaboration and other activities of member land grant institutions, national

agencies and state departments of agriculture, whereas primary functions are to aid in:

- Detecting new pest outbreaks
- Diagnosing the problem(s)
- Communicating diagnostic results through the national Network
- Analyzing the outbreak pattern
- Informing first responders of the select agents

Detection – Enhancing the Problem Solving Role of County-based Extension

Cooperative Extension already plays a key role in the network. Since the local county office is the place where solutions for field problems are sought after, Farm Advisors have always been on the front line of detecting new pest introductions. The network wishes to support that role and enhance the public’s awareness of the importance of that role.

Currently, when a farmer or PCA brings a problem to a county office, a Farm Advisor may recognize the problem and provide management solutions, or determine that the sample requires identification or diagnosis. The sample is shipped to a UC expert or the California Department of Agriculture (CDFA), a diagnostic lab in Sacramento. This process will not change, but should be enhanced with improved diagnosis capacity and communication.

The Farm Advisors should continue to be the initial contact for First Detectors who have encountered something new or usual. First Detectors are PCAs, growers, seed field inspectors, agronomists and anyone else who regularly inspects fields for pest management or crop production purposes. Farm Advisors’ input on the best approaches in developing First Detectors’ training is important to the success of the Network ([See meeting notice in this issue](#)).

The importance of training First Detectors is twofold: first, it ensures minimal qualifications for a national standard, and second, it provides the opportunity to be

What’s a Select Agent?

A select agent is a disease pathogen, plant or arthropod that has been identified as a particularly serious threat. Each region was asked to define the organisms they considered to be critical. The Western list included:

- *Ralstonia*
- Broomrape
- Fruitfly complex
- Potato/tomato late blight (*Phytophthora infestans*)
- Golden nematode complex
- Sudden oak death
- Gypsy moth complex

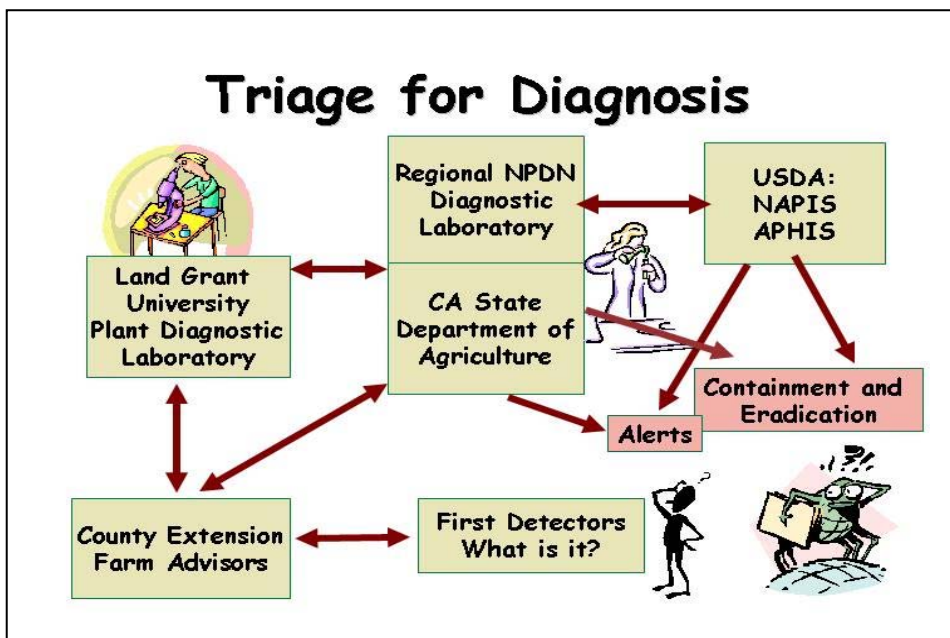
listed on a national registry that will notify First Detectors to be alert for the appearance of select agents.

Enhancing the Diagnostic Capacity

From a biosecurity point of view, new pest introductions should be contained as soon as possible, regardless whether intentionally or accidentally introduced. California faces the introduction of exotic species almost every day, and the Network can help improve our state's diagnostic capacity as well as help to emphasize vigilance. The diagnostic network in California consists of both UC labs and expertise and the CDFA diagnostic lab in Sacramento. The CDFA lab also serves as the

Western Regional Center Lab and will accept samples from other Network diagnostic labs in the region.

The bulk of funding provided in the past year has gone to improve the diagnostic labs with equipment and training. One goal of the Network is to provide standardized quality among the regional labs and among the satellite labs that feed into the regional labs. The regional diagnostic labs can forward samples suspected of being select agents to other labs with specific expertise. In some regions, there has been an emphasis on Distance Aided Diagnosis. This includes support in digital photography (both field and microscopic), and communication networks which allow real-time conferencing with appropriate experts.



This diagram illustrates potential problem diagnosis triage. It does not differ too much with current problem solving models, except for providing closer linkages between labs and responders. If the Farm Advisor recognizes the problem as a select agent or it is an unknown, it is moved to the next level. The process is repeated until a confirmed diagnosis is found. If the Farm Advisor recognizes the problem, the client is informed. In the future, this incident could be reported into the Network as well, to record known but unusual events.

Communications

The key to staying aware of potentially threatening pest outbreaks is in communicating and sharing results. The Network is establishing exchanges that ensure timely and secure data transmissions between Regional Centers and the National Agricultural Pest Information System (NAPIS), located at Purdue University. The Regional Centers will see all data coming from all labs in the region and will be able to see multiple events simultaneously. The Centers have direct access to the NPDN national database, housed at NAPIS, for rapid pattern detection. This same analysis tool can be used by regulatory agencies for response planning and forensics, if required.

Analysis

One advantage of having centralized data is the ability to see trends, develop hypotheses about outbreaks and predict future occurrences. Data of interest to the analysts include geographic spread, host and pest/disease relationships, timing of outbreaks, associated weather data, and topography. This part of the Network's mission is perhaps the most difficult, but when it is fully implemented, will be a great aid in preventing or ameliorating future outbreaks.

Summary

The National Plant Diagnostic Network was established to improve the security of our food and fiber production

systems. The success of the Network will be to prevent outbreaks of new diseases, arthropods or weeds, whether intentionally or unintentionally introduced. County-based Cooperative Extension plays a pivotal role in this national security program. We invite the Farm Advisors to participate in training, become First Detector trainers themselves, and to engage in the deployment of the Network to our clientele, who serve as First Detectors.

ANNOUNCEMENTS

Meetings For UC Personnel Only

UC Policy on Pesticide Use and Experimentation/ Pesticide Safety Training, Western Plant Diagnostic Network Workshop

Five training sessions are being offered during the March 2004 for campus, field station and county-based UC DANR personnel. DANR leadership has expressed a desire for all DANR personnel handling pesticides in research and demonstration settings to attend this training. The pesticide policy is covered in the morning session. Contact Rick Melnicoe (<<mailto:rsmelnicoe@ucdavis.edu>>rsmelnicoe@ucdavis.edu) at 530-754-8378 for any questions on the Pesticide Policy training.

March 3	Kearney Ag Center
March 10	Salinas CE office
March 16	UC Davis, Putah Creek Lodge
March 23	Imperial County, TBD
March 24	Riverside, University Extension Conference Center

Farm Advisors are invited to remain for an afternoon workshop conducted by the Western Plant Diagnostic Network. This workshop will describe the Network's function and allow for your input in its deployment at the local level.

The Network was created by Congress after the events of 9/11/01. Congress recognized that agricultural production in the United States was also at potential risk. The Agricultural Bioterrorism Protection Act of 2002 is intended to expand Homeland Security into plant and animal agricultural production arenas. As part of that Act, the National Plant Diagnostic Network (NPDN) was created in late 2002.

The Western Plant Diagnostic Network Center is located at UC Davis and is one of five regions that work within

NPDN. The goals of the Network are to increase the capacity of our plant diagnostic system and increase the awareness of those walking our fields. Since the local county office is the place where field problems are brought, Farm Advisors have always been on the front line of detecting new pest introductions. The network wishes to support this role and enhance the public's awareness of the importance of that role.

More information about the Network can be found at the Great Plains Plant Diagnostic Network, <<http://www.gpdn.org/>>www.gpdn.org. Contact Pete Goodell (ipmpbg@uckac.edu) if you have questions relating to the WPDN workshop.

Mileage will be reimbursed for UC attendees and lunch will be provided. Six hours of CE credit (3 hrs laws and regs, 3 hrs other) will be offered for those who wish them.

See the DANR calendar for the agenda and a registration form. The deadline for registration is two weeks prior to the training. There is no fee for these sessions.

Reservation questions should be directed to Christine Joshel (<<mailto:cejoshel@ucdavis.edu>>cejoshel@ucdavis.edu) at 530-752-7011.

New Healthy Lawns Program On The UC IPM Web Site

Lawns are the most intensively managed component of many suburban landscapes. In a concentrated area of lawn, homeowners can use more insecticides, fungicides, herbicides and fertilizers than in any other part of the garden. The lack of easy- to-access information sources in a user-friendly format has made it difficult for homeowners to design and carry out integrated, environmentally-friendly lawn care programs in California.

The University of California's Statewide IPM Program has a Healthy Lawns Web Site (www.ipm.ucdavis.edu/TOOLS/TURF) to help people establish and maintain their lawns. The site was developed by Cheryl Reynolds and Mary Louise Flint and incorporates the Cooperative Extension expertise of Pamela Giesel, Victor Gibeault, Ali Harivandi and Frank Wong. Lawns that are vigorous, but not overfertilized or overwatered, are better able to withstand pest infestations. The Healthy Lawns Web Site provides

assistance in diagnosing and managing problems with a minimum of pesticide use.

The Web Site is comprehensive and contains more than 500 screens and 300 color photographs. In addition to homeowners, public agency personnel, park managers, school employees, professional landscape pest managers and others who manage lawns will find the Healthy Lawns Website valuable.

Users will learn to identify turfgrass species as well as finding information on planting, renovating, and maintaining lawns. By entering a few variables, users can design an irrigation program, calculate the amount of fertilizer to apply, and determine the proper height to mow.

A diagnostic key helps users identify dozens of lawn problems and provides potential solutions. While most lawn problems are caused by poor cultural practices, people tend to blame pests. The diagnosis key first asks users a series of questions about conditions that may have contributed to their problem. Once some common problems are eliminated, users work through a series of photos that may be similar to their problem. The diagnostic key leads to summary screens containing information on identification, monitoring, prevention and least toxic management solutions for the likely causal agent or condition. More than 40 invertebrates, diseases, abiotic disorders and vertebrates are included.

An illustrated key to more than 50 weed species found in lawns and a complete section on weed management is also included.

