Taxonomic Support for Surveys

Appendix E-1

Revised April 10, 2014

Background

The National Identification Services (NIS) coordinates the identification of plant pests in support of USDA's regulatory programs. Accurate and timely identifications provide the foundation for quarantine action decisions and are essential in the effort to safeguard the nation's agricultural and natural resources.

NIS employs and collaborates with scientists who specialize in various plant pest groups, including weeds, insects, mites, mollusks and plant diseases. These scientists are stationed at a variety of institutions around the country, including federal research laboratories, plant inspection stations, land-grant universities, and natural history museums. Additionally, the PPQ CPHST Beltsville Laboratory is responsible for providing national confirmations through molecular testing using approved assays and sequencing in support of the agency's pest monitoring programs.

On June 13, 2007, the PPQ Deputy Administrator issued PPQ Policy No. PPQ-DA-2007-02 which established the role of PPQ NIS as the point of contact for all domestically-detected, introduced plant pest confirmations and communications. A Domestic Diagnostics Coordinator (DDS) position was established to administer the policy and coordinate domestic diagnostic needs for NIS. This position was filled in October of 2007 by Joel Floyd (USDA, APHIS, PPQ-QPAS,NIS 4700 River Rd., Unit 52, Riverdale, MD 20737, phone (301) 851-2115, fax (301) 734-5276, e-mail: joel.p.floyd@aphis.usda.gov). Any questions regarding sample routing or communication of results can be directed to the PPQ Survey Field Operations Manager (Brian Kopper, phone, 919-855-7318, e-mail, brian.j.kopper@aphis.usda.gov) or the Domestic Diagnostics Coordinator.

Taxonomic Support and Survey Activity

Taxonomic support for pest surveillance is basic to conducting quality surveys. A misidentification or incorrectly screened target pest can mean a missed opportunity for early detection when control strategies would be more viable and cost effective. The importance of good sorting, screening, and identifications in our domestic survey activity cannot be overemphasized.

Fortunately, most states have, or have access to, good taxonomic support within their state. Taxonomic support should be accounted for in cooperative agreements as another cost of conducting surveys. Taxonomists and laboratories within the state often may require supplies, develop training materials, or need to hire technicians to meet the needs of screening and identification. Moreover, when considering whether to survey for a particular pest a given year, it is advisable to consider the challenges of taxonomic support as a factor in choosing that as a survey target in the first place.

Sorting and Screening

For survey activity, samples that are properly sorted and screened prior to being examined by an identifier will result in quicker turn-around times for identification.

Sorting is the first level of activity that assures samples submitted are of the correct target group of pests being surveyed, i.e., after removal of debris, ensure that the correct order, or in some cases family, of insects is submitted; or for plant disease survey samples, select those that are symptomatic if appropriate. There should be a minimum level of sorting expected of surveyors depending on the target group, training, experience, or demonstrated ability.

Screening is a higher level of discrimination of samples such that the suspect target pests are separated from the known non-target, or native species of similar taxa. For example, only the suspect target species or those that appear similar to the target species are forwarded to an identifier for confirmation. There can be first level screening and second level depending on the difficulty and complexity of the group. Again, the degree of screening appropriate is dependent on the target group, training, experience, and demonstrated ability of the screener.

Check individual survey protocols to determine if samples should be sorted, screened, or sent entire (raw) before submitting for identification. If not specified in the protocol, assume that samples should be sorted at some level.

Resources for Sorting, Screening, and Identification

Sorting, screening, and identification resources and aids useful to CAPS and PPQ surveys are best developed by taxonomists who are knowledgeable of the taxa. This includes the target pests and the established or native organisms in the same group that are likely to be in samples, and can be confused with the target. Many times these aids can be regionally based. They can be in the form of dichotomous keys, picture guides, or reference collections. NIS encourages the development of these resources, and when aids are complete, posting them on the CAPS website so others can benefit. If local screening aids are developed, please notify Joel Floyd, the Domestic Diagnostics Coordinator, as to their availability. Please see the following link for survey screening aids currently available at CAPS Screening Aids.

Other Entities for Taxonomic Assistance in Surveys

When taxonomic support within a state is not adequate for a particular survey, in some cases other entities may assist including PPQ identifiers, universities and state departments of agriculture in other states, and independent institutions. Check with the PPQ CAPS National Operations Manager (NOM) about the availability of taxonomic assistance.

Universities and State Departments of Agriculture: Depending on the taxonomic group, there are a few cases where these two entities are interested in receiving samples from other states. Arrangements for payment, if required for these taxonomic services, can be made through cooperative agreements. The National Plant Diagnostic Network (NPDN) also has several regional hub laboratories that can provide service identifications of plant diseases in their respective regions. PPQ currently has arrangements with two state departments of agriculture (Oregon and Washington) and one university (Mississippi State University) through Farm Bill funding to provide taxonomic services to other states should they desire it. Contact your CAPS NOM for more information.

Independent Institutions: the Raleigh PPQ Field Operations office has set up multi-state arrangements for Carnegie Museum of Natural History to identify insects from trap samples. They prefer to receive unscreened material and work on a fee basis per sample.

PPQ Port Identifiers: There are over 70 identifiers in PPQ that are stationed at ports of entry who primarily identify pests encountered in international commerce including conveyances, imported cargo, passenger baggage, and propagative material. In some cases, these identifiers process survey samples generated in PPQ conducted surveys, and occasionally from CAPS surveys. Some port identifiers have wider geographical areas they are responsible for than just the ports of entry so can be used to channel suspect CAPS target detections for forwarding. They also can enter into our Pest ID database the PPQ form 391 for suspect CAPS target or other suspect new pests, prior to being forwarded for confirmation by an NIS recognized authority. The list of PPQ port identifiers and their areas of coverage is found here.

PPQ Domestic Identifiers: PPQ also has a limited number of domestic identifiers (three entomologists and two plant pathologists) normally stationed at universities who are primarily responsible for survey samples. Domestic identifiers can handle unscreened or partially screened samples, with prior arrangement through the PPQ CAPS NOM. They also can act as an alternative intermediary for sending an unknown suspect to, for example, the ARS Systematic Entomology Lab (SEL), depending on their specialty and area of coverage. They also can enter into our Pest ID database the PPQ form 391 for suspect CAPS target or other suspect new pests, prior to being forwarded for confirmation by an NIS recognized authority.

PPQ Domestic Identifiers

- Bobby Brown
  Domestic Entomology Identifier
  USDA, APHIS, PPQ
  901 W. State Street
  Smith Hall, Purdue University
  West Lafayette, IN 47907-2089

  Phone: 765-496-9673
  Fax: 765-494-0420

  Specialty: forest pests (Coleoptera, Hymenoptera)

  Area of coverage: primarily northeast and midwest

  e-mail: robert.c.brown@aphis.usda.gov

- Julieta Brambila
  Domestic Entomology Identifier
  USDA APHIS PPQ
  P.O. Box 147100
  Gainesville, FL 32614-7100

  Phone: 352-395-4792

  Specialty: adult Lepidoptera, Heteroptera

  Area of Coverage: primarily eastern US

  e-mail: julieta.brambila@aphis.usda.gov

- Kira Metz
  Domestic Entomology Identifier
  USDA, APHIS, PPQ
  Minnie Belle Heep 216D
  2475 TAMU
  College Station, TX 77843

  Phone: 979-450-5492

  Specialty: Lepidoptera, Coleoptera

  Area of Coverage: primarily western/ southern US

  e-mail: kira.zhaurova@aphis.usda.gov

- Grace O'Keefe
  Domestic Plant Pathology Identifier
  USDA, APHIS, PPQ
  105 Buckhout Lab
  Penn State University
  University Park, PA 16802

  Lab: 814 - 865 - 9896
  Cell: 814 – 450- 7186
  Fax: 814 - 863 – 8265

  Specialty: Molecular diagnostics (citrus health, *P. ramorum*, bacteriology, cyst nematode screening)

  Area of Coverage: Temporarily not accepting samples

  e-mail: grace.okeefe@aphis.usda.gov

- Craig A. Webb, Ph.D.
  Domestic Plant Pathology Identifier
  USDA, APHIS, PPQ
  Department of Plant Pathology
  Kansas State University
  4024 Throckmorton Plant Sciences
  Manhattan, KS 66506-5502

  Cell (785) 633-9117
  Office (785) 532-1349
  Fax: 785-532-5692

  Specialty: Molecular diagnostics (citrus health, *P. ramorum*, cyst nematode screening)

  Area of Coverage: primarily western US

  e-mail: craig.a.webb@aphis.usda.gov

ATTENTION SAMPLE SUBMITTERS: When sending domestic samples to domestic identifiers, it is required that you notify them first by e-mail or phone that you plan to send samples, describing what kind, and how many. Then once sent, forward an e-mail

to them with a tracking number for the express carrier that the samples were forwarded. If you plan to send a domestic sample to a national specialist, notify the CAPS NOM or the National Domestic Diagnostics Coordinator prior to sending the sample.

Final Confirmations

If identifiers or laboratories at the state, university, or institution level suspect they have detected a CAPS target, a plant pest new to the United States, or a quarantine pest of limited distribution in a new state, the specimens should be forwarded to an NIS recognized taxonomic authority for final confirmation. State cooperator and university taxonomists can go through a PPQ area identifier or the appropriate domestic identifier that covers their area to get the specimen in the PPQ system (for those identifiers, see Lists of PPQ Identifiers and PPQ National Specialists). They will then send it to the NIS recognized authority for that taxonomic group. In cases, domestic identifiers can make final confirmations depending on ID authority, accreditation, and proficiency testing.

State level taxonomists, who are reasonably sure they have a new US record, CAPS target, or new federal quarantine pest, can send the specimen directly to the NIS recognized authority, but must notify their State Survey Coordinator (SSC), PPQ Pest Survey Specialist (PSS), State Plant Health Director (SPHD), and State Plant Regulatory Official (SPRO).

Before forwarding these suspect specimens to identifiers or for confirmation by the NIS recognized authority, please complete a PPQ form 391 with the tentative determination. Also fax or send by e-mail a copy of the completed PPQ Form 391 to "Attention: Domestic Diagnostics Coordinator" at fax number 301-851-2115, or send a PDF file in an e-mail with the overnight carrier tracking number to:

aphis-ppq.nis.urgents@aphis.usda.gov

The addresses of NIS recognized authorities of where suspect specimens are to be sent can be found here.

Only use page 18, the "Urgent" listings, for suspected new US records, or state record of a significant pest, and page 21, the "Prompt" listings, for all others.

When the specimen is being forwarded to a specialist for final confirmation, use an overnight carrier, insure it is properly and securely packaged, and include the hard copy of the PPQ form 391 marked "Urgent" if it is a suspect new pest, or "Prompt" as above.

Please contact Joel Floyd, the Domestic Diagnostics Coordinator if you have questions about a particular sample routing, at phone number: 301-851-2115, or e-mail: joel.p.floyd@aphis.usda.gov

Digital Images for Confirmation of Domestic Detections

For the above confirmations, do not send digital images for confirmation. Send specimens in these instances. For entry into NAPIS, digital imaging confirmations can be used for new county records for widespread pests by state taxonomists or identifiers if they approve it first. They always have the prerogative to request the specimens be sent. Pests with PPQ regulatory programs may require specimens to be sent to SEL for new county records depending on the species.

Communications of Results

If no suspect CAPS target, program pests, or new detections are found, communication of these identification results can be made by domestic identifiers or taxonomists at other institutions directly back to the submitter. They can be in spread sheet form, on hard copy PPQ form 391's, or other informal means with the species found, or "no CAPS target or new suspect pest species found". Good record keeping by the intermediate taxonomists performing these identifications is essential.

All confirmations received from NIS recognized authorities, positive or negative, are communicated by NIS to the National Survey Coordinator (NSC) in PPQ Riverdale. The NSC then notifies the appropriate PPQ Policy Management, Field Operations, and the SPHD and SPRO simultaneously. One of these contacts should forward the results to the originating laboratory, diagnostician, identifier, and/or submitter of the specimen or sample.

Data Entry in NAPIS

For survey data entered into NAPIS, new country and state records should be confirmed by an NIS recognized authority, while for others that are more widespread, use the identifications from PPQ identifiers or state taxonomists. When in doubt, contact the PPQ Domestic Survey Coordinator.