

Imaging Techniques

Digital imaging equipment can consist of flatbed scanners, digital cameras, or microscopes. The images should be sharp and of sufficient size to show as much detail as possible. Remember, the success of the system relies on the clarity your image. When submitting digital images please follow these simple guidelines:

- Leaf material should be scanned on front and back. If you have several diseased leaves scan both front and back in the same scan.
- Insects can be scanned top and bottom, although most can be identified from the top of the specimen. If you have several insect specimens scan both top and bottom in the same scan. To prevent damage, place a sheet of paper or box over the specimen when scanning.
- Field situations should include a gross or wide-angle shot to show any large areas of damage. Close-ups should then be taken of individual diseased areas.
- Root samples may be scanned or photographed. Some root samples may need to be dissected and scanned to show internal damage or diseased areas.
- Adjust the borders of your scanning area to include only the sample. Extra scanned area takes up room and only increases the size of the image file.
- You will be the best judge of what type of image you feel will best represent the disease or damage.

As part of the digital diagnostics service, PDIDL has been building an extensive database of images and information on major plant disease and insect problems in the state. You may find basic information on causal agents, hosts, habitats, life cycles, control, etc., as well as links to available OCES fact sheets.

The site, "Digital Diagnostics @ OSU" is located at <http://entopl.okstate.edu/ddd/>.

Web Addresses:

Entomology & Plant Pathology
<http://entopl.okstate.edu/>

PDIDL

<http://entopl.okstate.edu/PDDL/>

Digital Diagnostics @ OSU

<http://entopl.okstate.edu/ddd/>

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DEPARTMENT OF
**Entomology &
Plant Pathology**

Mission

The primary mission of the Plant Disease and Insect Diagnostic Laboratory (PDIDL) is to provide residents in the State of Oklahoma with accurate diagnoses of plant diseases and insect pests and to make recommendations for their control. The PDIDL operates throughout the year to provide plant disease and insect identification services to extension agents, individuals, consultants, and commercial producers. The lab employs a full time plant disease diagnostician, Jennifer Olson, and an insect diagnostician, Jana Slaughter. A variety of techniques, from nematode extraction to wet culturing to ELISA tests for viruses, are used in the lab to make accurate plant disease determinations.

About the Laboratory

The lab operates three separate services related to plant disease and insect damage. These services may involve a fee for testing or may be provided free of charge. Always check with the lab or visit the website for latest pricing as these may change without notice.

Plant Disease Identification

The PDIDL strives to provide both accurate and timely diagnosis of the samples received. All samples received in the lab are examined for plant disease based on symptoms and the presence or absence of pathogens (microorganisms that cause disease). Diagnostic replies are sent primarily by e-mail (through PDIS) and include a diagnosis, recommendations for control, and supplemental information when available.

Fees

The PDIDL uses a wide variety of tests for determining which organism, if any, is producing disease symptoms on your plant. These methods include moist incubation, culturing for fungi or bacteria, nematode extraction from soil and/or roots, ELISA assays, and PCR. Many of these assays can be performed on a limited basis and by arrangement only. Check with the lab for specific pricing or visit our website for a list of current prices.

Services

Many of the problems people see in their plants, both in commercial production or in the landscape, are caused by environmental problems or improper care and are not infectious diseases. In these cases,

it may be impossible for the PDIDL to determine the cause for certain, since no pathogen can be isolated and identified.

PDIDL can provide:

- Diagnosis of most infectious plant diseases.
- Isolation and identification of nematodes from soil.
- Isolation and identification of nematodes from roots.
- Determination of the disease problem and recommendations for its management.

PDIDL cannot provide:

- Identification of molds or bacteria in soil, water, or air.
- Identification or isolation of plant pathogens from soil, water, or air.
- Positive identification of certain bacteria and viruses.
- Identification or screening for pesticide resistant plant pathogens.
- Identification of strain, race, mating type, pathovar or Anastomosis Group of pathogens.
- Isolation or identification of human or animal pathogens.
- Disease identification from dead or decomposing plants (with a few exceptions).
- Pesticide residue determinations.
- Plant tissue or soil nutrient analysis.
- Species identification of most pathogen isolates.
- Mushroom identification.

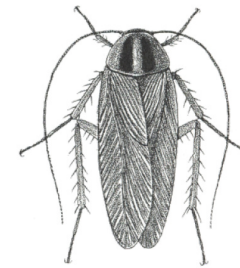
Plant Material Collection

- Collect several plant specimens showing various stages of disease development. Select plants that are still alive.
- Collect the entire plant whenever possible. Plants should be dug (not pulled) to keep the roots intact. For tree samples, the branches sent in should be at least 8 inches long.
- Wrap the roots of the plant in a plastic bag so that they do not dry out. If the plant is already potted then it can be left in the pot for shipping.
- Wrap the entire sample in plastic bags to keep it from drying out (exceptions: wrap fleshy fruits beginning to decay in newspaper).
- Place the plant in a sturdy box or mailing tube. Do not add water or wet paper towels. Send a detailed history explaining the disease symptoms; when disease began, name, address, and phone number.

Take it to your county Cooperative Extension Office to have it shipped or send it directly to the lab address on the front cover of this leaflet by first class mail.

Insect Identification

The PDIDL is also the primary resource for identification of insect and arthropod specimens sent to the department. The PDIDL provides no-cost identification services in particular for any household pest (cockroaches, ants, stored product pests, moths, flies, spiders, scorpions, etc.) as well as home ornamental



pests (wood borers, foliage feeders, aphids, mites, scales, etc.). The PDIDL will identify and make treatment recommendations to any county office, district office, or university department which submits a sample. Insect samples should be submitted in a vial or other container (add a small amount of alcohol

or a cotton ball soaked in alcohol). The US Postal Service will not allow packages containing more than 1oz of alcohol. As an alternative, most specimens can be identified using digital images which offers a rapid turnaround time (see section below).

The insect diagnostician will also be the primary telephone contact for all homeowner related calls and will forward unrelated calls to the appropriate state specialist (commercial turf, forage, crops, greenhouse, termite, etc.).

Digital Diagnostics @ OSU

The lab also offers a no-cost Internet based identification service (Plant Diagnostics Information System – PDIS), which utilizes digital images in lieu of mail-in samples. Many county Cooperative Extension Offices have the necessary digital imaging equipment and are trained to assist you (the nearest office can be found under County Government in your local phone book). The goal of PDIDL is to achieve a turnaround time of less than one day for responses to diagnostic requests. Many samples, especially insects, can be handled in as little as one hour or less.

For those individuals requesting a simple diagnosis, please e-mail images to: gotbugs@okstate.edu. or sickplants@okstate.edu. We will respond to your request as quickly as possible.