

Using a Diagnostic Lab

Reviewed by Tom Creswell and Jon Bonkowski – Oct 2024

The best way to identify insects, plants and plant diseases, or diagnose plant and pest problems, is to send a sample to a diagnostic laboratory. The National Plant Diagnostic Network website (npdn.org) lists diagnostic laboratories by state and region. Contact individual laboratories for specific submission and fee information.

To ensure an accurate diagnosis, it's important to collect and ship your specimens properly. Here are a few guidelines for collecting and shipping specimens to a diagnostic lab.

1. Collect fresh specimens. Send a generous amount of material, if available.
2. Ship specimens in a crush-proof container immediately after collecting. If holdover periods are encountered, keep specimen cool. Mail packages to avoid weekend transit.
3. Incomplete information or poorly selected specimens may result in an inaccurate diagnosis or inappropriate control recommendations. Badly damaged specimens are often unidentifiable and additional samples can cause delays.

Submitting Plant Specimens for Disease/Injury Diagnosis

Herbaceous Plants. For generally declining, wilting, or dying plants, send several whole plants showing a range of symptoms (early through more advanced) with roots and adjacent soil intact. Dig up the plants carefully. Place roots and surrounding soil in a plastic bag and fasten it to the base of stem with a twist tie or string. Do not add water or moist paper towels. Soil and attached roots of smaller specimens may also be secured in a double layer of heavy-duty aluminum foil pressed around the root system. Wrap the plants in dry newspaper and place in a crush-proof container for shipment.

Leaves/fruit/tubers. When localized infections (such as leaf spots or fruit rots) are suspected, send specimens representing early and moderate stages of disease. Press leaves flat between dry paper towels, newspaper, or cardboard. Wrap fruits or tubers in dry newspaper. Place in a crush-proof container for shipment.

Submitting Insect Specimens

Package insects carefully so they aren't damaged when they arrive at the lab. Separate and label the specimens if you send more than one type in the same package. Provide the appropriate information for each specimen.

Tiny or Soft-bodied Specimens. Submit such specimens (aphids, mites, thrips, caterpillars, grubs, spiders) in a small, leak-proof bottle or vial of 70% alcohol or hand sanitizer. Rubbing alcohol (isopropyl) is suitable and readily available. Do not submit insects in water, formaldehyde, or without alcohol or they will ferment and decompose. Package carefully to assure vials do not break in shipment. Small insects found on leaves can also be submitted on the plant material. Wrap several leaves in dry newspaper, and then seal in a plastic bag to prevent insects from escaping.

Hard-bodied Specimens. Submit such specimens (flies, grasshoppers, cockroaches, wasps, butterflies, beetles) dry in a crush-proof container. *Do not* tape insects to paper or place them loose in envelopes

Submitting Samples for Nematode Analysis

In general nematode identification requires collection of at least one quart of soil from the root zone of affected plants. Include roots if the plants are actively growing.

Place the entire sample in a plastic bag. *Do not* add water or allow it to dry out. Protect the sample from extreme heat (for example, don't leave samples inside a parked vehicle in direct sunlight). It is often helpful to collect a second, similar sample from a nearby area where plant growth appears normal.

Attach a label, note, or tag identifying the sample to the outside of each bag or package.

If you need assistance finding a nematode assay laboratory, please contact the plant diagnostic clinic in your state. See university diagnostic laboratories are listed in the State Contact Information table.