

Plant Diagnostics Sample Collection Guidelines

General Guidelines

The Plant and Pest Diagnostic Clinic (PPDC) diagnoses diseases of all types of plants. If insects or cultural problems are found, these are also investigated. To submit, obtain and complete the Plant Diagnostic Form from the PPDC website at www.clemson.edu/plantclinic or from your county extension office. Select as much recently affected plant tissue as possible, making an effort to represent all stages and aspects of the problem. Provide material which shows a range of symptoms present on the plant. Dead tissues are often useless for diagnosis, but some dead material can be included to represent the range of symptoms. Do not wash samples, as this may remove pathogen structures and encourage growth of secondary organisms. Several plants of the same kind, with the same symptoms, may constitute a representative sample and be covered by one submission fee.

Including photographs or digital images of the affected plant(s) in their environment is encouraged, but close-up photos usually aren't necessary. Enclose plant diagnostic samples in sturdy plastic bags to prevent tissue desiccation. Never add water or wet paper towels, as this encourages growth of secondary microorganisms and may lead to sample decay. Avoid sending wet or dirty leaves for the same reasons.

If plants are potted, submit entire plants in their pots and package well to prevent toppling during shipment, which can result in rotting of above-ground tissue due to soil contamination. When roots and soil are included from field-grown plants, enclose the roots in a plastic bag and tie off at the stem, or pack roots in a separate plastic bag.

It is very important to submit samples soon after collection. If submission must be delayed, keep samples cold, but not frozen, before mailing. Be sure to provide dates of sample collection and mailing. This information, along with a complete description of the problem, is needed so that damage or contamination of the sample during transit will not be confused with the real problem.

Consider that the source of the problem may be abiotic, or non-living. Because of this, be sure to complete the form, giving information on plant care, fertilizers, specific pesticides and other chemicals that have been used on or in the vicinity of the plant. Also, be assured that if the sample is deemed insufficient by diagnosticians, one free resubmission will be granted. Only diagnosticians can make this determination.

Packaging and Mailing Samples

It is best to pack samples in boxes to prevent crushing. Use ample packing material to prevent shifting and tumbling in transit. This will help to maintain sample quality during shipment. Consider the nature of the sample before mailing, as samples delayed in the mail are more apt to deteriorate in transit. Mail samples early in the week and they should arrive during the same week. The Clinic supplies plastic bags and insect vials for the counties to use for sending samples. County offices can request these by sending a form from the website to the Lab Coordinator, Diana Low, who will package and mail them as soon as possible after receipt of the request.

Replies

Depending on sample load at the time, replies can be expected from 7 - 10 days following sample receipt in the Clinic. During cooler seasons, replies may come more quickly. All replies are sent via email to clients and also to the affiliated county extension office. Agents included on the form will also receive a copy. If the client has no email address, even though preliminary reports will generate, only the final report will be mailed.

Guidelines for Specific Types of Plant Disease Samples

Leaf spots:

Collect at least 6 to 12 leaves representing all stages of infection. For plants with small leaves, cut off a branch with leaves intact. Highly succulent leaves should be treated as described in the next section.

Fruits or other fleshy tissues:

Avoid packing fruit, fleshy leaves or other fleshy organs showing advanced stages of rot; select early stages of infection or damage. Wipe off excess moisture and wrap fruits individually in dry paper and place in a paper bag. Such samples are highly perishable so overnight mail is recommended.

Stem lesions, diebacks, cankers, and galls:

Select branches with active lesions or young galls. Cut branches to include the affected area and a healthy portion on the same branch, if possible. Completely dead branches and twigs are generally undesirable for diagnosis, but may be included, along with more recently declining ones, to show a range of symptoms.

Turfgrass samples:

Cut out blocks of sod (grass with roots and soil attached) of at least 6 x 6 inches, to include the margin between affected and healthy areas. Place in a sturdy plastic bag and press to release trapped air.

Plants exhibiting wilting, yellowing, and general decline:

Submit entire plants, if possible. If they are container grown, submit several affected plants in their pots, if possible. If they are field grown, carefully dig them up and place soil-covered roots in one plastic bag, tie at the trunk, and secure another bag over the top. For large trees and shrubs, submit branches or other parts showing typical symptoms in a plastic bag. Include a handful of fine feeder roots, plus a few larger ones, of at least ¼ inch in diameter. Place roots in a separate plastic bag with a small amount of moist soil. Make sure that the roots submitted are from the plant itself, not from weeds, grass or ground covers growing below the affected plant.

Viral symptoms:

Mosaic patterns, chlorotic ring spots, and distorted new growth are common symptoms of virus diseases. Only a select few viruses can be identified through the PPDC but samples can be sent from the Clinic to a commercial lab at an additional cost, if desired. Send virus assay samples by overnight delivery.

Nematodes:

If nematode problems are suspected, soil from the sample can often be used to test for these microscopic round worms, but an additional fee will be required. If the Diagnostician suspects nematodes, clients will be notified and asked about testing. If agent suspects nematodes, clients should be encouraged to submit nematode assay samples. Collect a pint of soil from the advancing margin of decline and enclose in a nematode bag or small plastic bag. Do not allow the soil to dry out or become overheated during shipment.

It is helpful when clinic and nematode samples are submitted separately, that this information be provided on the diagnostic sample submission form. If more than one sample is submitted, be sure to label the bags and provide these field ids on the form as well. Nematode assay results will be sent by NAL lab personnel.

Nutritional Analysis:

Soil or tissue analysis samples should be sent directly to the Agricultural Service Lab (ASL). Soil or tissue analysis samples sent with PPDC samples will be delivered to the ASL, but there will be a delay in submission and results. A completed form and a separate payment must be included for these additional tests. Collect a pint of soil at a uniform depth for pH and nutrient analysis of mineral soils. For soilless mix, tissue nutrient analysis or other ASL tests, consult their website <https://www.clemson.edu/public/regulatory/ag-srvc-lab/index.html> or ASL personnel (864-656-2068) for more information.