

## **Appendix 2.**

### **How to Sample Insects, Nematodes, Diseases and Soil**

Adapted from EDIS by J.L. Gillett

#### **Collection of Insect Pests**

There are some basic equipment and materials that are used for the collection of samples. It's a good idea to record facts about the specimens when collected. You can put more than one specimen of its kind in the vial, particularly if it is a pest which can be obtained in high numbers in a single incidence. Don't jam-pack the insects into the vial. If the specimen is mutilated, find a better sample.

#### **Preservation**

After the insects are collected, they must be quickly killed to avoid damage. Most insects can be killed by placing them in the vial containing 70% alcohol (common rubbing alcohol). Beetles, true bugs, bees, wasps, and ants can be treated this way. Some insects like moths can be identified best from dry specimens. Kill them by freezing. Carefully placing dead moths or butterflies within a layer of wax paper will protect the wings. Galls and damaged plant material can be carefully wrapped in soft tissue. Do not apply scotch tape directly to a specimen or crush the insect in an envelope.

#### **Some "Do's and Don'ts" in insect sample collection**

- Do give information about the specimen and host. It is important to know where the specimen was collected and on what host (the name of plant), under what conditions, the number involved and the nature of the injury. Additional information is always welcome and often serves as the main criterion for selection for the proper control measure.
- Put specimens in proper container, alcohol, pill box, etc.
- Do indicate in writing what chemicals or treatments, if any, were used on the affected plant.
- Don't put specimens loose in an envelope.

**After collecting good samples, do not ruin them by allowing them to bake in the sun or in a car prior to submission.**

The Insect Identification Form (SR022) is the form that must accompany samples submitted to the UF/IFAS Insect Identification Service.

The Insect Identification Form is available in printable form through the EDIS Website. The form gives details about how to collect samples and what analyses will be performed. Please see Insect Identification Service (SR010) for more information.

The Insect Identification Form and more information can be found in the original publication: <http://edis.ifas.ufl.edu/SR022>.

## How to Collect a Sample for Nematode Analysis

- Collect soil from 20 locations.
- Samples should be taken 3 to 4 inches deep.
- A "T" type sampling tube is best for collecting nematode samples. A small trowel or other device may be used if necessary. If the sample is being taken before planting, collect samples in a zig-zag pattern across the area.
- If an area is producing unhealthy plants, collect samples from around the borders of the affected area. Collect samples where the plants are sick, but not dead.
- If there are a number of affected areas take a few samples from the border of several of them until you have the required 20.
- Put all the soil from each area into a single plastic bag.

### After planting:

- Often a nematode assay is needed to determine if nematodes are causing a plant to get sick.
- For this type of sample both soil and roots are required! Dig soil and roots from around the drip line of the plant.
- Sample depth depends on the size of the plant.
  - For most plants 6 inches deep is adequate.
- Do not include the top 1 inch of soil.
- If multiple plants are affected collect some soil and roots from several plants.
- Place the soil and roots together in the same plastic bag.
- A minimum of 1 pint of soil and 1 to 2 cups of roots are required.
- For small plants- entire plants, with the soil around their roots, can be submitted.

The Nematode Assay Form (SR023) is the form that must accompany samples submitted to the UF/IFAS Nematode Assay Laboratory. This service is available to the public for a fee of \$12.00 per sample. Florida Cooperative Extension personnel are not charged for samples when "trouble-shooting" plant growth problems.

The Nematode Assay Form is available in printable form through the EDIS Web site. The form gives details about how to collect samples and what analyses will be performed. Please see Nematode Assay Laboratory (SR011) for more information.

The Nematode Assay Form and more information can be found in the original publication found at: <http://edis.ifas.ufl.edu/SR011>.

## **How to Collect a Sample for Disease Analysis**

1. Submit generous amounts of plant material representing a range of symptoms.
2. Don't add water or pack a sample that is wet.
3. Keep samples refrigerated after collection until they are submitted.
4. Do not mix samples in the same submission bag.
5. Moisture from root samples will contribute to the decay of foliage samples if they are mixed together.
6. Plant disease identification procedures do not utilize soil or water. Excess soil can be hand shaken from root systems but leave enough soil to keep roots at field moisture levels.
7. Please mark sample packages with a "Warning" if sample has thorns or spines.
8. Remember to note recent pesticide history (last three weeks).

**After collecting good samples, do not ruin them by allowing them to bake in the sun or in a car prior to submission.**

Different services are provided at different clinics around the state please see <http://edis.ifas.ufl.edu/SR007> for more details.

## **How to Collect a Sample for Soil Nutrient Analysis**

Soil analysis can answer many questions including:

- What is the pH of your soil?
- What are the fertility levels of the principal nutrients?
- How much and what kind of lime does your soil need?
- Which nutrients need to be added to your soil as fertilizer?
- How much fertilizer is needed for your plants and soil type?

## **Some "Do's and Don'ts" of soil sample collection**

- Don't sample areas too small to be fertilized separately.
- Don't sample unusual areas. Avoid wet spots.
- Do have the sample you collect represent the average of the field or area sampled.
- Do use shovel or trowel
  - Dig a V-shaped hole in the soil 6 inches deep.
  - Slice 1-inch slab off one side of hole.
  - Lift out and save center 1-inch wide strip of soil.
- Do sample only to 3 to 6 inch depth.
- Do mix together the cores from one area.
- Do put about a pint of the mixed soil in a soil sample bag.
- Do identify samples by letter or number.

For more information and submission forms please see the original EDIS publication: <http://edis.ifas.ufl.edu/SS312>.