The Alabama Cooperative Extension System supports two plant diagnostic laboratories. One is at Auburn University; the other is located in Birmingham at the Birmingham Botanical Gardens.

The Plant Diagnostic Laboratory at Auburn University provides three services: plant problem diagnosis, soil nematode analysis, and insect identification. Plant problems sent to the lab include diseases, nematode injury, insect damage, chemical damage, environmental stress, horticultural and agronomic problems, or wildlife damage.

Plant samples at the Auburn University Plant Diagnostic Lab are initially examined by a plant pathologist. Some samples may then be referred to Extension specialists in entomology, agronomy, horticulture, or wildlife.

In addition to plant problem diagnosis, soil nematode analysis, and insect identification, plants are also received for identification. These plants are referred to agronomists and horticulturists who typically respond to the inquiries.

Weeds for identification should be sent directly to Extension weed scientists. Label the package **WEED ID** and mail to Plant Diagnostic Lab, 961 South Donahue Drive, Auburn University, Auburn, AL 36849-5624. Give the name of the crop infested.

The Plant Diagnostic Laboratory at the C. Beaty Hanna Horticulture and Environmental Center at the Birmingham Botanical Gardens in Birmingham is available to provide plant disease diagnoses to residents of the greater Birmingham area, including Jefferson, Tuscaloosa, Walker, Blount, St. Clair, Shelby, and Bibb counties.

It is extremely important that samples and specimens be collected and packaged correctly for diagnosis and analysis. For example:

- Soil for nematode analysis must not be dried out or too wet.
- Nematodes that have been subjected to extreme temperatures or moisture will die and are not suitable for diagnosis.
- Dried or decayed samples are not satisfactory for diagnostic purposes.
- Plant, soil, and insect samples must be accompanied by the proper information for adequate diagnosis, analysis, and/or identification.

The information in this section explains the proper collecting and packaging techniques needed for an accurate diagnosis. Read it carefully. Then, mail or bring samples and specimens to the following:

**Plant Diagnostic Lab**  
ALFA Agricultural Services & Research Building  
961 South Donahue Drive  
Auburn University, AL 36849-5624

If you reside in Jefferson or adjoining counties, you may bring or mail samples to the following:

**Plant Diagnostic Lab**  
C. Beaty Hanna Horticulture & Environmental Center  
Birmingham Botanical Gardens  
2612 Lane Park Road  
Birmingham, AL 35223-1802

If possible, mail plant and soil samples during the first part of the week. Samples mailed on Thursday or Friday usually remain in the post office during the weekend. By Monday morning, samples are often decayed or damaged and are not suitable for diagnosis or analysis.

**Service charges at the Plant Diagnostic Labs are as follows:**

- **Soil Nematode Analysis:** $10
- **Plant Problem/Disease Diagnosis:** depends on work needed  
  - Residential: usually $15  
  - Commercial: usually $20
- **Advanced Molecular Testing:** $30 minimum; charge depends upon specific tests done as per discussion with the client.
- **Insect Identification:**  
  - Commercial/Industrial: $20.

The exact charge for plant problem or disease diagnosis depends on the type of diagnostic tests performed. Do not send a check or money with the plant sample; a billing statement will be mailed with the diagnostic report, which is usually sent by regular mail. When requested, the response is made by phone, fax, or e-mail.
Collecting for Identification

The insect identification is the first step in determining whether it should be controlled and what control measures should be used. Control measures should be taken only when the pest infestation is sufficient to cause damage or disturbance to the user. The information that is needed is a good insect specimen and supporting documentation. If this information is lacking, the pest should not be collected.

Collecting for Preservation

Most insects should be preserved immediately after collection. Lightly soak the specimen in alcohol. This ensures that some important identification information is available. If the insect is not large enough to be soaked, it may be dried by boiling for about one minute and allowed to cool before being placed in hand sanitizer or tissue paper lightly soaked in alcohol. Grubs, maggots, and ants should be placed into hot (nearly boiling) water for a minute and allowed to cool.
Large, fragile insects such as butterflies and moths should be killed in a kill jar or freezer and stored in a crushed-proof container without alcohol. Tissue paper gently placed around the specimens will keep them from becoming damaged in the mail. This is the only way to ship these specimens.

Very fragile insects, such as mites, thrips, aphids, scales, should be packaged and sent in the same manner as diseased plants. These insects are easily damaged by removing them from the plant; also, their appearance on the plant as well as damage symptoms may be important for identification.

Finally, if at all possible, ticks found on humans or pets should be sent in alive. Ticks can be kept alive for several days in a small, loosely capped container with a slightly moistened paper towel or a cotton swab moistened with one drop of water.

**SAMPLE PLANTS FOR WEED IDENTIFICATION**

(This section has not been updated for 2023. Please refer to labels for potential changes.)

Steve Li, Extension Weed Science Specialist, Assistant Professor, Crop, Soil and Environmental Sciences

To correctly identify weeds, a complete plant or a specimen containing all the leaves, stem, roots, and flowers is absolutely necessary. The success of each identification largely depends on the condition of the plant material at the time of identification. Decomposed, wilted, or incomplete plant specimens make identification difficult, if not impossible. Adequate specimens with flowers or fruit structure usually produce positive results. The following instructions will help in the identification process and in making control recommendations.

**Collecting Weed Samples**

1. Collect and submit intact plants with roots. If the weed is small, collect several plants. Select healthy weeds without physical and insect damage.  
2. If the weed has flowers, fruit, or seed heads present, collect plants with those parts and carefully package them.  
3. If the weed is too large to submit in one piece, send samples of the roots, stem, leaves, flowers, and fruit individually. Please indicate the size of the plant.  
4. For some weeds, especially grass weeds or nutsedge, a sample without seedheads is very difficult to identify. For samples without seedheads, only a general identification can be conducted.

**Packaging and Mailing Samples**

1. Do not let the plants stay around several days before packaging. If possible, use wet paper towel or cloth to wrap the sample immediately after digging out of the ground.  
2. Place the sample in a sealed plastic bag to retain moisture. Pack sealed bag in a sturdy shipping container that is large enough to prevent crushing the sample during transit.  
3. If the sample cannot be shipped immediately for identification, store the sealed plastic bag in refrigerator at 35 to 40 degrees F.  
4. Label the package for weed ID and send to Plant Diagnostic Lab, 961 South Donahue Drive, Auburn University, AL 36849-5624. Fresh samples may also be submitted to Diagnostic Lab, 961 South Donahue Drive, Auburn University, AL 36849-5624.

**Submitting Digital Images**

Many smartphones and mobile devices can take high-quality pictures, and these devices are easy to carry and use in field. Pictures taken with smartphones and mobile devices can be directly attached to text messages and e-mails, which increases flexibility and reduces the time needed for identification. Follow these general guidelines to ensure that your pictures meet the requirements for weed identification using digital images.

1. Use appropriate picture size and resolution. Many small or compressed images submitted to Extension weed scientists blur instantly when they are enlarged on screen to analyze certain plant parts.  
2. Be sure you have adequate natural or artificial light so the images will not be blurred. Do not take pictures in the field early in the morning or very late in the afternoon.  
3. Use a single color background, such as cardboard, foam board, truck tailgate, or a desktop along with measuring sticks or coins to demonstrate the size of a weed and plant part such as leaves or flowers  
4. Make sure that the focus point of the camera is on the weed or part of the weed and not on any object in front of or behind the sample. Select the focus point can be done by manually touching the plant or plant part on the screen to focus on the area you want to point out. This step is particularly important when the camera gets very close to the weed sample or when several objects are around the focus area.  
5. Take one or two pictures to show the overall appearance and size of the weed. A reference object in the picture, such as a water bottle, a notebook, a 5-gallon bucket, or a yardstick, can assist Extension weed scientists in identifying this weed. Other sample pictures should focus on the details of a specific plant part, such as the flower, leaf, root, or stem. Pictures taken from multiple angles will help in the identification process. Put mobile devices physically close to the weed to show details of certain plant parts instead of using the zoom-in function, which often causes blurriness.  
6. Use a flashlight, if necessary. However, ambient natural light usually makes samples look the best.  
7. Do not compress the pictures too much when you send them through text or e-mail. iPhones and iPads automatically ask users if they wish to send pictures in small, medium, large, or actual size. Choose large or actual size so enlarging pictures is possible during the identification process.

**Pesticide Safety Education Program**

The Alabama Department of Agriculture and Industries operates a state laboratory for special pesticide residue problems related to raw agricultural products and the environment. Samples that originate because of a second party or conflict between landowners and/or pesticide applicator and/or landowner(s) should be official samples taken by an Alabama Department of Agriculture and Industries inspector. Call 334-240-7239 with specific details about why an analysis is needed. Arrangements will be made concerning the taking of an official sample. DO NOT mail or transport samples to this laboratory.

**Water Samples**

Private water wells that are contaminated and possibly endangering human health can be handled by the Alabama Department of Environmental Management, Groundwater Section, in Montgomery, Alabama (telephone: 334-270-5655). The director of this section should be contacted because an inspector will be needed to obtain an official sample. DO NOT mail or transport samples to this laboratory.
FOR MORE INFORMATION on pesticides, pesticide safety, or submitting samples for analysis, see the following publications in the IPM series:
IPM 1293, “Safety.” Safety contact information; worker protection standards; the safe use, handling, and storage of pesticides
IPM 1295, “General Pesticide Information.” Federal and state restricted use pesticide lists; pesticides and water quality
IPM 1317, “Appendix.” Pesticide guidelines for agronomic crops, including preharvest intervals; rain-free requirements; grazing restrictions; crop rotation guidelines; and the names, classifications, and toxicities of pesticides.

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