

GROWERTALKS

Features

8/1/2024

Testing Nursery Media

Lynn Griffith

Doing testing in house

For 6-in. containers and larger, you'll generally need about an 18-in. soil probe and a sturdy plastic bucket to collect your subsamples. Do NOT use a metal bucket, as metals can affect certain readings. Use a good quality plastic bucket that has NEVER had fertilizer in it or your samples will be contaminated.

Don't just grab a containerized plant and call that a sample. We like to think of our potting media and fertilizers being perfectly uniform. The truth is they are not. Take about eight to 10 subsamples for each media sample you wish to collect, whether testing in house or at an outside lab. Insert the soil probe from top to bottom of the soil profile. Give the soil probe a twist with your wrist in order to bite into the soil a little bit, sort of a figure 8. This gives you a nice full profile of soil in the probe. If you just stick the soil into the media and pull it out, you won't get a full tube of soil, especially if the media is dry. Tap each subsample into the bucket.

Do this with eight or 10 different containers in the block. Avoid the edges of the blocks, as well as plants near roadways where dust may kick up. Sample through the block of plants on a diagonal line so that you avoid row patterns. Some employees may fertilize differently than others if using granular fertilizer. With liquid or soluble feed, the differences are less. The keyword in sampling is "representative". The sample you collect should accurately represent the situation in the block of plants.

With smaller pots or liners, say 4 in. and below, you'll usually want to shake the entire root balls into your bucket. The soil probe is rather useless for containers 5 in. or less. Shake the media off of enough small plants so that you have about a coffee cup of media for your sample.

There are basically four methods used to test media in the nursery. They are direct stick with pH and EC meters, saturated media extract, pour through, and 2:1 dilution. Direct stick meters can work well if you have good ones.



However, you may find you need to insert the meter into the pot in several different places in order to get a reading that you have confidence in.

For example, with controlled-release fertilizer, if your probe is near the fertilizer prill you may get significantly higher EC readings than if you're a few inches away. Don't be afraid to insert your meter into several different pots in several different ways. There may be more variability than you expect.

Saturated media extract is the method that most commercial media testing labs use. Essentially, you make a mudball with media and distilled water. The mudball usually sits overnight. You then use a vacuum pump, flasks and filter paper to siphon off the liquid. You throw the media away and analyze the liquid it was soaking in. This method requires equipment and space. It's generally not very practical for in-house testing.

The pour-through method became popular about 30 years ago. Generally, you pour distilled or deionized water (both are acceptable) through several root balls and collect the liquid and test the leachate. Notice with saturated media extract and pour through you're testing the liquid fraction and not the media itself.

The fourth method is the one I prefer—2:1 dilution. You collect about a coffee cup of media from various pots outlined in the paragraphs above. You bring your samples to a designated indoor location. You need paper or plastic cups, plastic swizzle sticks or coffee stirrers, and coffee scoops or similar scoops. From your collected sample you take one or two scoops of media and place it in the plastic cup. You then add two or four scoops of distilled or deionized water to the sample. The ratio should be two parts water to one part media. Stir the media/water sample thoroughly with the swizzle stick and let the slurry sit for about an hour to come to equilibrium. You can then take readings with your pH and EC meters, and record the results on a form.

The function of too many pH and EC meters in nurseries is to sit in a drawer and collect dust. The way a grower gets pH and EC samples taken and analyzed is to DESIGNATE an employee to do it on a regular basis as part of their job. Large nurseries should usually sample weekly. The grower or section manager can advise the sampler on what crops to sample. Smaller nurseries may need to sample less often, perhaps every two weeks. These simple tasks can keep growers out of trouble and help avoid crop disasters. Growers can make adjustments if they have timely and accurate data.

When you're testing something for pH, you're really testing for hydrogen ions, which are protons. When you take an electrical conductivity or EC reading, you're measuring how much current is passing between two electrical contacts. The amount of electricity conducted is directly proportional to the quantity of salts or charged particles in the media or solution. Calibration solutions with known pH and EC are readily available. You should calibrate your meters every time you use them.

Sending it to a lab

Sometimes growers will want more complete media analysis. This is usually best done by sending media samples off to an outside lab. It's generally much cheaper to do it this way than to try to have a complete media testing laboratory at your facility. Doing that becomes expensive and time-consuming very quickly.

A good media testing lab will give you pH and EC, as well as major and minor nutrients and rate the values for you. Some labs provide recommendations, some do not. The sampling procedure is basically the same for in-house versus outside lab testing. However, when sending samples to a lab, it's best to use their submittal forms. You fill out the contact information for the nursery and assign sample identifications such as "6 inch azalea block 3." The sample IDs are mainly for the growers and not the lab personnel. Most of the time you can get submittal forms from your lab's website.

As far as choosing labs goes, geography is not that important. If you put samples in a box and ship them off, you

can ship them across the state or across the country. Find a lab who gives you good service and whose reports you understand and can use to make growing decisions. Stick with them. Sending samples to different labs tend to cause more confusion than anything else. I use the Flat Rate Priority Mail boxes from the post office. They ship pretty quickly and economically. You can also use the commercial shipping services, especially if you're in a hurry.

As for bags, plastic or plastic-lined bags are preferable to paper. Wet media can easily cause paper bags to fall apart. Your lab may supply soil sample bags or you can use 1-quart zip top bags. Paper bags are preferable for tissue samples. You can usually get these at a grocery store. Mark the sample ID on the outside of the bag using the marker. Don't put a little piece of paper with the sample ID inside the bag. Wet media will often destroy little pieces of paper.

Once you've completed taking eight to 10 subsamples from a block of plants, the sample media should then be homogenized by shaking and rotating the bucket thoroughly. pH and conductivity levels vary with the root ball, so homogenize your sample well. Label the sample bag with crop and location. Most labs will want at least a coffee cup of soil.

How long it takes to get results back will vary by the laboratory and sometimes by season. When I was in the business, I offered 24-hour turnaround time on soil samples, media samples, plant tissue analyses, water analyses and nematode assays. Nobody seems to be that fast anymore. If you really need sample results quickly, most labs will offer a "RUSH" or expedited service, usually with an additional charge. Most labs will get media samples done in a few days.

Most of the better nurseries utilize a combination of in-house testing and commercial lab testing. Some universities will test your media as well. Gathering these types of data can help growers evaluate growing programs, make growing decisions and troubleshoot. Methods for testing field soil are different than methods used for media. Make sure the lab you use is proficient in testing container media. **GT**

Lynn Griffith is a tropical plant and soil expert based in Boca Raton, Florida.