

THIS IS A TEST

Do you need a Soil Test or a Soilless Media Test?

By Carolyn Wilson, Johnston County Extension Master Gardener Volunteer



Mineral Soil or Soilless Medium – different soil tests

Soil vs Soilless as defined by NC Dept of Agriculture, Agronomic Services																																	
	<p>LAWN AND GARDEN SOIL SAMPLE INFORMATION- NC SOIL ONLY</p> <p>NCSA&CS Agronomic Division Soil Testing Section Mailing Address: 1040 Mail Service Ctr. Raleigh, NC 27699-1040 Physical Address (UPS/FedEx): 4300 Reedy Creek Rd. Raleigh, NC 27607 Phone: (919) 733-2855 Website: www.ncagr.gov/agronomi</p> <p>For laboratory results, go to www.ncagr.gov/agronomi/pals</p> <table border="1"> <thead> <tr> <th>PAYMENT</th> <th>CLIENT INFORMATION (PLEASE PRINT LEGIBLY)</th> <th>OTHER RECIPIENT</th> </tr> </thead> <tbody> <tr> <td>FEE TOTAL \$ _____</td> <td>LAST NAME FIRST NAME</td> <td>LAST NAME</td> </tr> <tr> <td>COLLECTED* <small>Check preferred- payable to NCSA&CS Please NO CASH</small></td> <td>ADDRESS</td> <td>ADDRESS</td> </tr> <tr> <td><small>Reminders Use NCSA&CS sample boxes only. Fill box with soil to red line. Bags of any type not accepted.</small></td> <td>CITY STATE ZIP</td> <td>CITY</td> </tr> <tr> <td><small>Acquire boxes at our lab or NC Cooperative Extension office.</small></td> <td>E-MAIL ADDRESS <i>(needed for report notification)</i></td> <td>E-MAIL ADDRESS</td> </tr> <tr> <td></td> <td>PHONE (best contact number) PALS # (if known)</td> <td>PHONE</td> </tr> </tbody> </table>	PAYMENT	CLIENT INFORMATION (PLEASE PRINT LEGIBLY)	OTHER RECIPIENT	FEE TOTAL \$ _____	LAST NAME FIRST NAME	LAST NAME	COLLECTED* <small>Check preferred- payable to NCSA&CS Please NO CASH</small>	ADDRESS	ADDRESS	<small>Reminders Use NCSA&CS sample boxes only. Fill box with soil to red line. Bags of any type not accepted.</small>	CITY STATE ZIP	CITY	<small>Acquire boxes at our lab or NC Cooperative Extension office.</small>	E-MAIL ADDRESS <i>(needed for report notification)</i>	E-MAIL ADDRESS		PHONE (best contact number) PALS # (if known)	PHONE														
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<p>mineral soil https://www.ncagr.gov/agronomi/uyrst.htm</p>	<p>Homeowner mineral soil (form) https://www.ncagr.gov/agronomi/documents/FormA-D-15_corrected_logo.pdf</p>																																
	<p>SOILLESS MEDIA SUBMISSION</p> <p><small>required *)</small> NCSA&CS Agronomic Division Plant/Waste/Solution/Media Section Mailing Address: 1040 Mail Service Center, Raleigh NC 27699-1040 Physical Address (UPS/FedEx/DHS): 4300 Reedy Creek Rd, Raleigh NC 27607 State (\$25) <input type="checkbox"/> Phone: (919) 733-2855 For lab results go to: www.ncagr.gov/agronomi</p> <table border="1"> <thead> <tr> <th>PAYMENT*</th> <th>GROWER INFORMATION*</th> <th>ADVI</th> </tr> </thead> <tbody> <tr> <td>FEE TOTAL \$ _____</td> <td>LAST NAME FIRST NAME</td> <td>LAST NAME</td> </tr> <tr> <td>AMT PAID \$ _____</td> <td>ADDRESS</td> <td>ADDRESS</td> </tr> <tr> <td>METHOD OF PAYMENT: <input type="checkbox"/> CASH/CHECK <input type="checkbox"/> INVOICE <input type="checkbox"/> Grower <input type="checkbox"/> Advisor/Consultant</td> <td>CITY STATE ZIP</td> <td>CITY</td> </tr> <tr> <td><input type="checkbox"/> ESCROW ACCOUNT: <small>(provide Account Name or Number)</small></td> <td>EMAIL ADDRESS</td> <td>EMAIL ADDRESS</td> </tr> <tr> <td><small>Reports will appear as "Pay Now" until Payment is applied*</small></td> <td>PHONE PALS #</td> <td>PHONE</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>SAMPLE ID *</th> <th>MEDIA CODE *</th> <th>MEDIA TYPE *</th> <th>FERT TYPE *</th> <th>PRE or POST PLANT</th> <th>CROP</th> <th>CORRESPONDING <input type="checkbox"/> Solution <input type="checkbox"/> Nonmatricula</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	PAYMENT*	GROWER INFORMATION*	ADVI	FEE TOTAL \$ _____	LAST NAME FIRST NAME	LAST NAME	AMT PAID \$ _____	ADDRESS	ADDRESS	METHOD OF PAYMENT: <input type="checkbox"/> CASH/CHECK <input type="checkbox"/> INVOICE <input type="checkbox"/> Grower <input type="checkbox"/> Advisor/Consultant	CITY STATE ZIP	CITY	<input type="checkbox"/> ESCROW ACCOUNT: <small>(provide Account Name or Number)</small>	EMAIL ADDRESS	EMAIL ADDRESS	<small>Reports will appear as "Pay Now" until Payment is applied*</small>	PHONE PALS #	PHONE	SAMPLE ID *	MEDIA CODE *	MEDIA TYPE *	FERT TYPE *	PRE or POST PLANT	CROP	CORRESPONDING <input type="checkbox"/> Solution <input type="checkbox"/> Nonmatricula							
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<p>soilless medium https://www.ncagr.gov/agronomi/uyrmedia.htm</p>	<p>https://www.ncagr.gov/agronomi/pdffiles/Soilless_Media_Sample_Submission_Form_Fillable.pdf</p>																																

This fact might surprise a lot of people. For soil testing purposes, compost, potting soils, and mixes are NOT considered soils. (Yeah, I know the bag says soil.) All of these are considered Soilless Media. (You can read more about soil mixes [here](#)). Think back to when you started your garden. You might have heavily amended the existing soil, or created raised beds or containers using compost, potting soils, and mixes. Are you thinking it might be time to get the soil tested? Before you get those little boxes and your samples together, pause to consider what type of test you need: a soil test or a soilless media test.

Choosing the appropriate test is vital. Did you know that potting soils and mixes are tested in a completely different way than native mineral soil (i.e., the sand, silt, clay, and organic matter that are naturally occurring)? Because of the physical and chemical differences in mineral soil and soilless media, the lab uses different extraction methods. Soil tests will not provide accurate results for soilless mixes, and vice versa. *As a rule of thumb, if there is close to 50 percent or more amended material (peat, bark, compost), you should consider using a soilless test instead of a soil test.* If you are unsure about which test is appropriate in your situation, call the main number at the NCDA&CS Agronomic Services Division (919) 664-1600 for guidance. That call might save you a lot of time and maybe a little money.

The test used for potting mixes is Saturated Media Extract (SME), also called a greenhouse media test or soilless media test. Unlike mineral soil tests that extract nutrients with weak acid solutions, the SME sample is mixed with distilled water at a standard dilution and then analyzed. A soilless media test will measure soluble salts (by electrical conductivity) and nitrogen in the nitrate and ammonium forms, which a mineral soil test does not.

You can test soilless media either before you plant by sampling bulk material or after you plant by sampling containers. You can request routine predictive results to help monitor the effectiveness of your fertilizer program or ask for diagnostic results to help identify nutrient problems. If you are considering amending native soil, ideally you would test your native soil *before* you bring in bulk materials to properly select the additions that will improve the soil for your intended use. You would also always test any bulk material *before* you add it to your garden. It is a lot easier to correct any problems at that stage. You would keep records of the nutrient content of anything you add that comes in a package with a label. It's never too late to commit to using those best practices as you move forward.

The sampling procedure for soilless media differs in important ways from the procedure for mineral soil. While you should still collect and mix multiple subsamples to achieve a representative sample, the total sample volume should be at least one quart. Two quarts are preferable. Moisten samples from dry, bulk loads before submission to the lab. Place each sample in a sealable, plastic bag labeled in permanent marker with the sample ID and your name and address. Fill out the Soilless Media Sample Form. Package samples, the completed form, and appropriate fee together. The fee per sample for N.C. residents is \$5 no matter the time of year. Submit to the Agronomic Division's Plant/Waste/Solution/Media Section.

You will also notice some differences between a Soil test report and Soilless Media test report. SME measures pH, electrical conductivity (EC), nitrate-nitrogen (NO₃ -N), ammonium-nitrogen (NH₄ -N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), sulfur (S), sodium (Na) and chloride (Cl⁻). To interpret your results, compare your test results with the normal ranges of pH, soluble salts, and nutrient levels set by the lab and printed on the report. If you want specific recommendations from the NC Department of Agriculture and Consumer Services, you should supply information about the intended use of your sample including what you are trying to grow, the type of media, and type of fertilizer. If you are seeking diagnostic recommendations, include details such as fertilizer history, disease or insect presence, and symptomology on your Sample Form.

Sources

Nicholson, Don. NCDA&CS Region 6 Agronomist. Understanding Soilless Media Testing. 17 July 2023. Telephone Interview.

<http://www.ncagr.gov/agronomi/uyrmedia.htm>

<https://chatham.ces.ncsu.edu/getting-started-with-your-container-garden/>

<https://www.uvm.edu/vtvegandberry/factsheets/OrganicPottingMixes.pdf> (Potting Mix for Organic Growers)

<https://extension.tennessee.edu/publications/Documents/W804-B.pdf>

https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1161&context=anr_reports

<https://ag.umass.edu/greenhouse-floriculture/fact-sheets/soil-tests-sampling-interpreting-results-of-greenhouse-soil-0>