l'm not a robot



Rutgers soil testing

Another resource provided for the residents of Ocean County is the Rutgers NIAES Cooperative Extension of Ocean County. The Cooperative Extension of Ocean County is the hub for many environmentally conscious volunteer groups including the Master Gardeners and the 4-H clubs. Soil testing combinations are grouped by land-use situation. Non-soil tests and fee adjustments follow. Rutgers plant/soil researchers should contact the Soil Testing Laboratory about tests and fees. Landscape Fertility Test Nutrients, pH, recommendations for two plantings \$20 Soil/plant Suitability test Nutrients, pH, soluble salt level, organic matter content, percentages of sand/silt/clay, soil textural class, gravel content, recommendations \$90 Farm Fertility Test Nutrients, pH, estimated CEC & cation saturation, recommendations from RCE agent \$20 Pre-sidedress Nitrate Test only Nitrate-nitrogen soil to determine mid-season fertilizer requirement. Results within 3 working days (assuming dry sample when received) \$20 Full Farm Test Nutrients, pH, estimated CEC & cation saturation, plant-available (inorganic) nitrogen, organic matter content, recommendations from RCE agent \$55 Sport Turf Golf/ Sports Turf Golf/ Sports Turf Total Test Nutrients, pH, estimated CEC & cation saturation, recommendations \$20 Golf/ Sports Turf Total Test Nutrients, pH, estimated CEC & cation saturation, soluble salt level, organic matter content, soil textural class, recommendations, soluble salt level, organic matter content will be determined by loss-on-ignition as described by USGA guidelines \$55 Technical Permeability Class Rating Percentages sand/silt/clay, sieve analysis of sand, gravel content, estimate of permeability \$115 Acid-producing Soil Test pH before and after oxidation, level of sulfate, for determination of acid sulfide/sulfate soil \$50 Topsoil Specification Test Fertility, pH, soluble salt level, organic matter content, percentages of sand/silt/clay, soil textural class, gravel content, visual assessment \$100 Ecological Research Test Nutrients, pH, estimated CEC & cation saturation, soluble salts, organic matter content, percentages of sand/silt/clay, soil textural class, total nitrogen, plant-available (inorganic) nitrogen \$140 Compost/Technical pH, electrical conductivity, plant-available (inorganic) nitrogen by saturated media extract, organic matter content, visual assessment \$150 Organic Media Extract Fertility Nutrients and pH for organic (low-mineral content/soilless) growing media \$30 Greenhouse (soilless) Potting Media Nutrients, pH, electrical conductivity, plant-available (inorganic) nitrogen by saturated media extract, organic matter content, electrical conductivity, plant-available (inorganic) nitrogen by saturated media extract, organic matter content, total nitrogen, C:N ratio, maturity index, moisture content, visual assessment \$150 Compost Available Nutrients Add to either compost test above; water-soluble (plant-available) P, K, Ca, Mg, Cu, Mn, Zn, B by saturated media extract \$17 Individual Special Soil Tests Soil pH & Lime Requirement only Includes recommendations for selected crop/plant. Fee includes soil processing \$15 Soil CO2-burst Test Microbial respiration as biological indicator of soil health, with estimation of nitrogen release. If this is not done in combination with pH or fertility analysis, add soil processing fee (below) \$18 Soluble Salts Level of total dissolved ions measured by electrical conductivity. If this is not done in combination with pH or fertility analysis, add soil processing fee (below) \$18 Loss-on-ignition Organic Matter Used for very high organic-content soil. If this is not done in combination with pH or fertility analysis, add soil processing fee (below) \$18 Soil particle-size analysis Percentages of sand/silt/clay and textural class. If this is not done in combination with pH or fertility analysis, add soil processing fee (below) \$40 Inorganic Nitrogen Plant-available, nitrate-nitrogen and ammonium-nitrogen. If this is not done in combination with pH or fertility analysis, add soil processing fee (below) \$25 Total Nitrogen Includes organic-bound nitrogen and ammonium-nitrogen. If this is not done in combination with pH or fertility analysis, add soil processing fee (below) \$25 Cation Exchange Capacity (CEC) or cation nutrients, respectively. If this is not done in combination with pH or fertility analysis, add soil processing fee (below) \$65 CEC & Exchangeable Cations If this is not done in combination. If this is not done in combination. If this is not done in combination with pH or fertility analysis, add soil processing fee (below) \$65 CEC & Exchangeable Cations If this is not done in combination. If this is not done in combination with pH or fertility analysis, add soil processing fee (below) \$65 CEC & Exchangeable Cations If this is not done in combination. combination with pH or fertility analysis, add soil processing fee (below) \$18 USDA Sieve Analysis of Sand Percentages of very coarse, medium, fine and very fine sand classes, plus gravel \$65 Custom Sieve Analysis Client specified - limited selection \$17 per sieve Other Analysis for Irrigation pH, soluble salt content, nitrate nitrogen, phosphorus, iron \$30 Express Processing For single sample testing fees totaling \$50 or less Prioritizes sample in queue for each test requested. \$75 Specialty Services Soil Processing Fee Grinding/sieving (already included in combination tests and pH only) preparation for analysis \$5 Special Reporting Requirements Examples: compliance of results to specifications, critique of specifications, recommendations to meet specifications, critique of speci tests to help you better understand the issues that are impacting your homes lawn or garden. Plant Diagnostics Lab The Plant Diagnostic facility of Rutgers New Jersey Agricultural Experiment Station (NJAES). Our mission is to provide accurate and timely diagnoses of plant health problems for the residents of New Jersey. Soil Testing Laboratory is a part of Rutgers New Jersey Agricultural Experiment Station (NJAES). Located on the G. H. Cook Campus, the Soil Testing Laboratory is a service unit that offers chemical and mechanical analyses of soils for the residents of New Jersey and for Rutgers University researchers. Their mission is to provide accurate and timely soil and water test reports to meet the unique agricultural and environmental needs of our state. Analyzing your soil's fertility lets you apply supplementary nutrients to suit the needs of the plants you wish to grow. Proper lime and fertilizer application reduces wasted nutrients and stress on plants. To measure soil fertility accurately, however, you must prepare a representative sample, which means you must sample more than one spot within the area of concern. For large plants, and vegetable gardens, separate samples will allow proper recommendations for each site. Before starting, determine that the soil is dry enough to sample by squeezing a handful. It is dry enough if the soil crumbles when you open your fist. Begin sampling by making a vertical cut to a depth of 6 to 8 inches with a spade or trowel. Make a second cut at a 45 degree angle to the first, removing the wedge-shaped section and setting it aside. Make another vertical cut 1/2 inch from the first cut and equal in depth. Place this slice in a clean bucket and replace the wedge-shaped section. Repeat this procedure 5 to 8 times within the area to be tested. The larger the area, the more slices you should take. Thoroughly mix the soil in the bucket, removing any plant material and large stones. For a pH test, place 1/2 cup of the mix in a clean container. For the complete test, keep a pint of the soil mix. A pH test indicates the level of soil acidity (pH 7.0). Turf, flowers and most vegetables grow best in soils that are slightly acidic (pH 6.0 to 6.5). Most New Jersey soils are naturally too acid except for acid-loving plants, such as rhododendrons and azaleas. If the pH of the soil is too low, add lime before starting a new lawn area or garden to give it time to react with the soil to raise the availability of some nutrients, so adding more lime than is recommended is not beneficial. The office of Rutgers Cooperative Extension of Mercer County can analyze soil for pH (acidity). The soil sample should be taken as directed above Samples should be brought to the office and the results will be mailed to you. Soil Test for Major Nutrients The Rutgers University Soil Test Lab can perform a test for major nutrients and soil pH. The analysis includes soil pH (acidity), and potassium, phosphorus, calcium, and magnesium levels. A recommendation for limestone and fertilizer is provided. Soils should be tested every 3 to 5 years to insure accurate limestone and fertilizer application and to maximize growing conditions for your plants. plastic bag for the soil, and a questionnaire about the site from the Extension office. The kit can be mailed directly to the Soils Lab in New Brunswick. Test results and recommendations will be mailed to you. Soil testing kits may be purchased from your local county office of Rutgers New Jersey Agricultural Experiment Station (NJAES) Cooperative Extension. The purchase price of a soil testing kit includes the cost of the standard fertility test. Each kit includes an information sheet provided with the soil testing kit describes proper sampling procedure. Please read and follow the directions carefully. For further information, refer to Rutgers Cooperative Extension publication FS797, Soil Testing for Home Lawns and Gardens. The other option for submitting a soil sample for analysis is to send the samples in your own package with payment and a Soil Test Questionnaire. See Sampling Instructions for complete details. The standard soil test determines the fertility level and pH of the sample. In a standard soil test, the plant nutrients boron, calcium, copper, magnesium, and zinc are quantified to determine their availability to the crop. The suitability of soil acidity is measured by pH. Fertilizer and liming requirements recommended by the Soil Testing Laboratory are based on soil nutrient levels, pH, and in some cases, crop management and site conditions. Fertilizer recommendations include nitrogen requirements of your crop. Nitrogen that is available to plants, is short-lived in soil. Because of this, nitrogen recommendations are based primarily on seasonal crop requirements rather than on the actual nitrogen soil level. Be assured that the recommendations received with your soil tests, available upon request, assess other soil properties that are important for crop management. These tests include soluble salt levels, organic matter content, and soil texture. How to Have Your Soil Testing Laboratory is a part of Rutgers New Jersey Agricultural Experiment Station (NJAES). Located on the G. H. Cook Campus, the Soil Testing Laboratory is a service unit that offers chemical analyses of soils for the residents of New Jersey and for Rutgers University researchers. Our mission is to provide accurate and timely soil and water test reports to meet the unique agricultural and environmental needs of our state. Benefits of Having Soil Tested Soil testing is economically prudent. The appropriate application of nutrients and/or lime can save money. Don't buy nutrients that your soil doesn't need; instead, invest in those nutrients that will bring about healthy growth and yields. To apply optimal levels of nutrients in the soil. Having too much or too little of these nutrients or limestone can be harmful to plant growth. We can help you adjust these levels for best results. Soil testing is an environmentally responsible practice. Applying fertilizer or other nutrient sources. By applying fertilizer appropriately, you can ensure that you are "feeding" your plants in an environmentally friendly and "green" way. Take the NJ Turnpike to Exit 9 (New Brunswick). Stay to the right after going through the toll plaza and get on Route 1 South. Stay in the right lane on Route 18 North to Route 18 Nort entrance is on the left side of the building. Visit Rutgers' Online Directions Rutgers, The State University of New Jersey 57 US Highway 1 New Brunswick, NJ 08901-8554 Phone: 848-932-9295 Email: soiltest@njaes.rutgers.edu Hours: Monday - Friday 7:30 a.m. - 5 p.m. Follow Us on Facebook! Soil must be sampled by you according to instructions provided (with soil test kit, or online). Send the soil sample to the Rutgers Soil Testing Lab (STL) for analysis with a Soil Test Questionnaire; use a soil test kit or other packaging, or deliver in person. When testing is completed, a soil test report will be generated and sent (by email as PDF, or by US Postal Service). The report will include recommendations if planting/crops were indicated on the Soil Test Questionnaire. See How to get your soil test kit? A soil test kit? A soil test kit? A soil test kit? test kit is comprised of Soil Sampling Instructions, a Soil Test Questionnaire, and a mailer (cotton bag with plastic insert attached to an envelope), and it is available at county offices of Rutgers Cooperative Extension at a cost that covers the soil fertility test fee. Additional test requests can be accommodated with appropriate payment. Sampling Instructions and the Soil Test Questionnaire are provided in the envelope, and the completed questionnaire should be inserted back into the envelope. Obtain a soil sample by following the Sampling Instructions and insert it into the plastic bag and secure into the cotton bag. This package can be mailed as-is; take to your local post office for correct postage. If you are submitting more than one sample, the cost may be less by boxing them together. Drying your soil sample(s) before packaging may also decrease mailing cost. What is a Soil Test Questionnaire? A Soil Test Questionnaire? A Soil Test Questionnaire? A Soil Test Questionnaire? indicate the test request, any payment information (if needed), and the type of planting for which fertilizer/limestone recommendations. For most appropriate recommendations, please be sure to complete the Soil Test Questionnaire (including new or established and other information requested). Please be careful to write legibly, especially in the email address field. Do I need a soil test kit to get my soil sample(s) tested; instead you can follow soil sample(s) and completed Soil Test Questionnaire (also available online) in a box or padded envelope. How much soil is needed for a soil test? How much for Greenhouse/potting media or compost? As Sampling Instructions describe, two cups (1 pint) of soil is requested; if you have a soil test kit, fit the plastic insert into the cotton bag and fill to capacity (if you follow Sampling Instructions, you should have more than enough to fill the bag); be sure to secure the inner and outer bags carefully. If you are not using a soil test kit, a sandwich-size plastic bag can be used, fill at least half-full. Gravel and stones (as well as roots, wood, mulch, etc.) can be removed in most cases, because they will be removed before (most) analyses anyway and only take up space and add weight to your package. But if you are requesting a Topsoil Evaluation or sieve analysis, do not remove gravel/stones, and providing an extra "cup" of soil is helpful in providing a representative sample to determine the gravel content. For the technical Topsoil Specification Test, it is beneficial to lab staff to have even more (a gallon-size bag filled halfway). For greenhouse media or compost, a gallon-size bag full is most appropriate. When submitting these types of samples, be sure to use the Organic Media Questionnaire. What is included with a standard Fertility test (including pre-paid with soil test kit)? The Fertility Test includes: Soil pH and Adams-Evans buffer pH (aka Lime Requirement Index), and Nutrients extracted by Mehlich 3: phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), copper (Cu), manganese (Mn), zinc (Zn), boron (B), and iron (Fe). Note nitrogen (N) is not included. If plantings/crops are indicated on page 2 of the Soil Test Questionnaire, recommendations (for limestone and fertilizer) will be provided, including the nitrogen (N) requirement for the crops indicated. The standard Fertility test cannot be used for organic matter-based media, such as compost or potting soil. The standard Fertility test cannot be used for organic matter-based media, such as compost or potting soil. content soils (for example, more than 20% organic matter by weight). This may apply to raised beds that are composed of compost and/or imported "organic topsoil". For greenhouse media or compost and/or imported "organic topsoil". fertility test? Nitrogen (N) content is not part of the standard soil test. Inorganic forms of N, which are available to plants, are short-lived in soil, with values changing constantly, and sometimes rapidly, throughout the growing season. Because of this, nitrogen recommendations are more reliably based on seasonal requirements of the crop. Soil test reports do include recommendations for fertilizer N, phosphorus, and potassium (N-P2O5-K2O) requirements. If plant-available nitrogen levels in soil are of special interest, the inorganic nitrogen levels in soil are of special interest. generated for only two planting types/crops? As sampling instructions indicate, areas used for different types of plants should be sampled separately since the areas only muddies the analytical data, representing none of the areas accurately and result in inappropriate recommendations (garbage in, garbage out). So the soil sample should be representative of one defined area, ideally with limited number of plant types. Why didn't I get recommendations on my soil test report? Or I received recommendations for a different crop/planting than I need. When a crop/planting (or no more than two) is checked on the Soil Test Questionnaire, a recommendation for soil pH adjustment and fertilizer amendment will be provided. If the Soil Test Questionnaire is not completed to include a crop/planting, lab staff may provide "default" recommendations, please be sure to complete the Soil Test Questionnaire (including new or established and other information requested). Note that some crops/plantings do not have recommendations programmed into the soil test database program. What other testing services are offered by STL? A complete list of services and fees is provided here: Services and fees. Notice that combination tests are organized by different uses (Landscape, Farm, Athletic Field/Golf Course, Technical, Greenhouse & Compost), and individual tests are listed as well. What if I have questions about the Soil Test Report? For most users, Soil Test Report? For most users, Soil Test Report? Extension staff to view and discuss results, recommendations, and other issues related to plant health. The telephone number for your county Cooperative Extension of [your local] County). Does the lab test compost test for small, backyard composting provides basic information to assess quality for general landscape use. The technical compost test is appropriate for larger scale and commercial composting operations, and includes many indices required to assure good quality product. Does the lab test potting soil? Yes. Find the Greenhouse (soilless) growing media option under the heading "Organic Media". The Saturated Media Extraction procedure, most appropriate for high-organic content soils, is used. This may apply to raised beds that are composed of compost and/or imported "organic topsoil" (for example, more than 20% organic matter by weight). Do you test for disease organisms in soil? No. The soil is a natural habitat for millions of organisms (per gram), many of which are benign or even beneficial to plant health. Some microbes co-exist with plants without causing disease but become pathogenic organisms may be in the soil but not necessarily active. These are reasons that this soil microbial analysis may not be helpful. IF you are having a plant health problem and need a diagnostic Laboratory. For most situations, plant specimens are needed for diagnostic by plant health diagnostic cases for soilborne nematodes. Plant, insect, and fungus/mold identification are other services provided by Rutgers Plant Diagnostic Laboratory. Does STL test for lead? Does the lab test for arsenic/chromium/heavy metals/contaminants? How about oil? Lead (Pb) is the only contaminant currently analyzed at STL. It is referred to as "lead screening" in the list of Services and Fees because the method is not EPA-approved, but it has a strong correlation to EPA methods. Certain "heavy metals" (Mn, Cu, Zn, Fe) are also plant (and human) nutrients and are analyzed and reported on the soil test report; the values however are not "total" values but Mehlich-3 values extractable (correlated to plant availability). While contaminants are outside of this lab's focus, new technology for analyzing a wide range of element (total) concentrations may allow the lab? Most of the methods used by Rutgers Soil Testing Laboratory are described in USDA's Northeastern Regional Publication No. 493, Recommended Soil Testing Procedures used here are not described in this publication, but test methods may be described in Soil Science Society of America's "Methods of Soil Analysis" volumes, or similar (modifications for routine testing labs are sometimes necessary). In some cases methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, but all methods are described by product or equipment manufacturer, for example, checks Reference samples Soil Science Society of America/North American Proficiency Testing program When will I get the results of the soil tests? Turnaround time varies based on many factors, including number and types of analyses requested, number of other samples in line for same tests, staffing, holidays, equipment maintenance. Target turnaround time (TAT) for the basic fertility test is one week or less from the date the sample is received. Another target TAT is two (2) weeks for a Topsoil Evaluation. These are estimates, not guarantees. Additional test requests may increase TAT further. For quickest delivery of a soil test report, provide your email address on the Soil Test Questionnaire. How will I get soil test results? If you provide an email address on the Soil Test Questionnaire, your soil test report will be sent electronically as a pdf attachment from "soilslab" as soon as testing is completed and reports are generated. Depending on your email security settings, the email/report might be filtered into your spam/junk mail folder instead of the Inbox. Whitelist soilslab@njaes.rutgers.edu in your email program to assure delivery to the Inbox, or be sure to check your soil test report by mail, leave the email address line blank. Note the soil test database allows for either print-to-mail or email reporting options, and only one email address can be accommodated. (A report that is emailed can easily be forwarded to another address, of course.) What does "Soil Health" (Solvita® soil CO2-burst) test tell us about soil health and management? CO2 respired from dried/re-wetted soil sample (during 24-hour incubation) provides a measure of microbial activity as soil organic matter is decomposed; this is often used as a biological indicator of Soil Health. When soil microbial activity is low under laboratory conditions, it suggests low food/energy source and/or confounding chemical or physical conditions. physical problems, is the general recommendation when soil microbial activity is low. However, a very high level of activity that also indicate/lead to soil health problems. The microbial respiration also provides an estimate of nitrogen released from organic matter, potentially available to plants, to credit against nitrogen fertilizer requirement/recommendation. (Subtract the credit from the automatically-generated N recommendation). Notice this may change the fertilizer ratio suggested. What is the difference between total nitrogen and inorganic nitrogen? Which do I need? In most cases of soil fertility testing, nitrogen (N) analysis is not required. Fertilizer N recommendations are not based on a dynamic factor such as measured available N. Instead, a fertilizer N recommendation is based on the type of crop and time of year (growth stage). If a "snapshot" of plant-available N concentration in soil is desired, inorganic N analysis (for nitrate-N and ammonium-N, parts-per-million units) should be requested; be aware that these values can change relatively quickly in response to microbial and plant activity, rainfall or irrigation, volatilization, and other soil conditions. Total N values (percentage) represent predominantly N combined in organic matter (humus) and are not as variable. total N can be released over time by microbial decomposition of the organic matter to provide plant-available N. See Soil Health/Solvita® CO2-burst test. March 23, 2020 Rick VanVranken The Rutgers Plant Diagnostic and Soil Testing Laboratories are currently closed to the public. However, lab employees will be processing samples during limited hours and without extra support from student workers. Instructions for submitting plant samples and questions to the Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) directly to: Rutgers Plant Diagnostic Lab are: Samples may be shipped via UPS or FedEx (not via US Postal Service) d email us at rutgerspdl@njaes.rutgers.edu to inform us when to expect your sample (please provide tracking information if available). Hand deliveries of samples may be left in the hallway at our front door. Please email us at rutgerspdl@njaes.rutgers.edu to inform us that you have dropped off a sample. For questions, the best way to reach the lab staff is via email to rutgerspdl@njaes.rutgers.edu as we may have limited access to voicemail. To for submit soil samples and questions to the Soils Testing Laboratory, Rutgers, The State University of New Jersey, 57 US Highway 1, New Brunswick, NJ 08901-8554. In-person visits for dropping off samples are not permitted. Soil testing kits, sampling instructions and the soil testing kits can be mailed, or for clients without soil testing kits, sampling instructions and the soil testing kits can be mailed. the type of soil you are testing and the analysis required. For questions, the best way to reach the lab staff is via email to: soiltest@njaes.rutgers.edu as we may have limited hours and no student workers to assist, please anticipate slower turnaround times. We thank you for your patience.