

# Why Soil pH Matters

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When we are having problems with our lawns or plants, the first thing that comes to mind is often that it is a pest or disease. We often overlook that it could be a problem with the soil. One of the first questions that I ask when folks come to me with a plant problem is “do you know what the soil pH is”? Most folks know a little about pH but not why it is so important.

Soil pH is measured on a scale from 1-14. A pH of 7 is neutral, while a pH below 7 is acidic, and a pH above 7 is alkaline. Most plants grow well with a slightly acidic pH range between 5.8 and 6.3. It is no wonder that the average soil pH in Florida is almost right in the middle at 6.1. The composition and origin of the soil helps to determine its natural pH. A soil formed under the native pine stands can be more acidic, verses, the soils formed along the coast containing more shell materials can be more alkaline. Another thing that can contribute to a higher soil pH in your landscape is as a result of building materials such as concrete, mortar, and lime-rock that may be left in the soil following construction of the residence. I have often seen landscapes where the soil pH changed dramatically near the street, sidewalk, or home foundation.

Soil pH affects the growth and quality of landscape plants more than how much fertilizer is applied. Soil pH is the gatekeeper that controls how much of the nutrients in the soil are made available to the plant. For instance, if the pH is too low, potassium, calcium, and magnesium is made less available creating a nutrient deficiency, while toxicity symptoms can occur with aluminum, iron and zinc as too much of it is made available. The opposite can also be a problem. If the pH is too high; iron, manganese, boron, copper, and zinc are made less available leading to a deficiency.

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To determine soil pH a soil test can be performed by a reputable lab such as the UF/IFAS soil testing lab in Gainesville. For soil testing procedures go to the following link <http://edis.ifas.ufl.edu/pdffiles/SS/SS18700.pdf>.

If you live in Duval County you can also drop off a soil sample at the Duval County Extension office at 1010 N. McDuff Avenue and get your soil pH tested there.

To sample your soil for testing, divide the landscape into sections and test areas separately. Some plants have different lime and fertilizer needs so distinguish between lawns, vegetables and acid loving plants like blueberries and azaleas. To collect the sample, use a hand trowel or shovel to take a small scoop of soil from 10 to 15 different spots within area. Take soil from the top 2 to 4" for lawn and top 6" for vegetables, fruit, and trees/shrubs. Place the 10 to 15 samples in a bucket and mix. Remove any plant debris or mulch from samples. Dry samples by spreading soil out on newspaper and let it air dry. Then place about two cups of the dry soil in a paper or plastic bag for mailing.

To adjust soil pH on acidic soils, lime, or dolomitic lime can be added to achieve the target pH. Do not add lime unless a soil test recommends it. Adding lime to an already alkaline soil can cause a lot of problems for plants. The soil test results should recommend the amount of lime that should be applied. The lime should be mixed into the top 6-8 inches of the soil prior to planting the garden or adding turf. If plants are already in the ground the addition of lime should be split up into smaller increments over a couple of weeks to reduce the chance of root damage.

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While raising pH is relatively easy, it is harder to lower the pH of alkaline soils. If the pH tests come back with the soil pH being too high, a combination of several things can help. Practices that can lower pH when used in combination include the incorporation of organic matter such as Canadian peat, the use of elemental sulfur, mulching with pine straw or ground pine bark, and the use of acid forming fertilizers typically labeled for use with azaleas/ camellias.

Speaking of azaleas and camellias, there are several plants that don't grow well in soils that have a pH of 5.5 or greater. These plants are known as acid loving plants and include azaleas, blueberries, camellias and gardenias. When growing these plants entire planting bed can be improved by adding organic matter, such as peat, compost, or pine bark. In addition to lowering soil pH, these amendments increase moisture and nutrient retention.

It is always a good practice to know your soil pH. You can use it to select the proper plant material for your garden. It is also a good practice to have your pH tested before you establish a new garden. If you find that your soil isn't suited for plants you want to grow, consider growing them in raised beds or containers where the soil is easier to amend. For more information on soil pH in the landscape or garden go to: <https://edis.ifas.ufl.edu/pdf/files/SS/SS48000.pdf>

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