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Feature Article - for release March 1, 2010
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One of the reoccurring phrases that we hear at the extension office is “nothing grows right down here” or “that’s not how we grew plants up north!” Of course things grow differently here in Central Florida; we are hundreds, if not thousands, of miles south of where you might have lived and although plants do grow just fine here, they probably are not the ones that you are used to. We live in a semi-tropical region and not only is the weather totally different but the soils are as well. Most people find it easy to accept the fact that our temperatures are radically different (after all that is why most of us moved to Florida) but it is harder to accept the fact that our soils are very special. It takes time, patience and hard work to get a successful vegetable garden growing the way that you may want it to and most of that is determined by the type of soil you have.

There are five main factors that have influenced soil formation in Florida. These factors are parent material (underlying rock), climate, topography, biological factors and time. Due to fluctuations in the sea level over millennium, Florida soils have had little time to develop like their northern cousins. Sand and other marine sediments were deposited in our area by the currents as sea levels fluctuated. This sediment hardened and formed the parent material for our soils and is mostly comprised of limestone. For most of us living in Indian River County, digging in the soil is similar to digging at the beach. Our soils are made up of about 90-95% sand and there are still the remnants of broken sea shells and evidence of marine life mixed throughout. Due to the warm, wet, humid climate of our state, organic material break down even faster and little can be found in the soil. Plants native to this area have adapted to the lower nutritive value of these soils, but traditional garden varieties of fruits and vegetables do not survive well without additional applications of minerals and nutrients. Florida soils are also rather young, relatively speaking, compared to soils found farther north. Since most of our area was covered with water for extended periods of time, little development has taken place over the course of geological time.

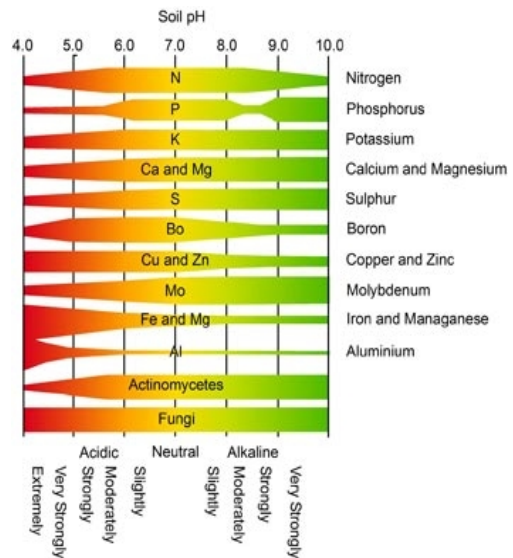


Wabasso series (Spodosol)
<http://edis.ifas.ufl.edu/ss403>

Not only are we mostly dealing with very sandy soil, but this soil usually has a very high pH, and this causes its own set of problems when trying to grow a vegetable garden. pH is a measurement of how basic or acidic something is; the pH scale ranges from 0 to 14 with most vegetable growing best in soils with pHs between 5.8 and 6.5, a little on the acidic side. Unfortunately, in most of Indian River County (especially east of I-95 with some exceptions), the soil pH is generally over 7 and sometimes getting as high as 8.4. This is very basic and can be compared to sea water or a baking soda solution. Plants don't

necessarily like or dislike a certain pH, although quite often people will put it in those terms. The issue is that at lower pHs and higher pHs nutrients in the soil might not be available for the plant to take up because they are tied up in another chemical process. When this happens the plant might begin to show outward signs of this deficiency, but the plant was probably suffering long before you began to notice.

Plants that are grown in soils that have a high pH (basic) often have problems with nitrogen, potassium, calcium, phosphorus, iron, manganese, zinc and boron deficiencies. At extremely high pHs calcium and phosphorus bind together and make both unavailable to the plant, although the soil might be naturally high in phosphorus. On the other hand, plants that are grown in soils that are acidic (lower pHs) exhibit deficiencies with nitrogen, calcium, magnesium, sulfur and molybdenum. At extremely low pHs (5.5 and below) aluminum toxicity can occur and affects the plant roots causing them to be stunted greatly reducing their effectiveness to uptake water and nutrients. Most of the soil samples that come through our office for testing are on the basic side and the average gardener needs a little help to modify their soil. Unfortunately, it is easier to modify an acidic soil by liming than it is to lower a basic pH; sulfur can be added but care must be taken not to add too much and the change is seasonal, meaning that you might have to apply it again next year.



One of the best ways to help modify the soil makeup is by adding organic matter, lots and lots of it. Organic matter not only helps to lower the pH, but will add nutrients, help with water retention and suppress weeds. There are many different ways to use organic matter; from fresh manure and grass clippings to mature compost. Mature compost can be used when you are planting seeds or plants but fresh organic matter needs time to mature and should be incorporated into the soil about one month or more before planting. Even with large amounts of organic matter, it still might be necessary to add a fertilizer supplement in order to achieve the results that you are looking for. In this case, consult the extension office before adding any fertilizer treatment.

Taking a soil sample every year and having at least the pH analyzed is an imperative first step for any gardener. Necessary information can be gathered from the test; it will help you plan your garden and avoid many of the pitfalls that face today's gardener in Indian River County. Remember for better results "don't guess, soil test."

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