

The Delta Urban Soils Laboratory

Why is soil testing important?

Understanding and testing the health of your soil is important for many reasons, such as improving crop production, reducing contaminants that negatively impact the environment, and an increased understanding of the nutrients that are available and needed in the soil for successful plant growth and development. Soil testing helps determine the health of your land because healthy land produces healthy crops.

Common soil tests that are important to know

Texture:



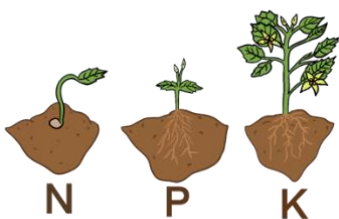
Soil texture is the proportion of sand, silt, and clay. It affects how well water drains through the soil, how much water and nutrients the soil can hold, how often you need to water or fertilize. For example, having well-drained soil means you will typically have good soil aeration with good root growth and healthy produce. Texture can also affect how workable a soil is. Soils that have a higher percentage of sand are easier to dig than soils with a high percentage of clay. Soils enriched in clay content are typically more fertile but harder to dig. Also, different plants prefer different soil textures.

pH:



pH is the measure of how acidic or alkaline the soil is. The pH scale is from 0 to 14 where 7 is neutral, anything above 7 is alkaline and anything below 7 is acidic. Knowing the pH level of the soil allows you to adjust it to meet the needs of the plants you are growing. Most horticulture crops can grow in soil with a pH level of 6 - 7.5. The nutrition, growth, and yields of most crops decrease in low pH and increase as pH rises to an optimum level.

NPK:



NPK stands for Nitrogen, Phosphorus, and Potassium. These are the most essential nutrients in the soil needed for healthy plant growth and development. It is important to understand the amount of these nutrients present in the soil so you can add more as needed. For example, Nitrogen promotes leaf growth; Phosphorus promotes a strong root system, and Potassium helps in fruit and seed production as well as the overall health of the plant.

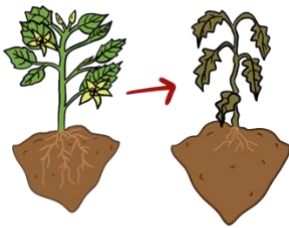
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Total Organic Content:



Organic matter comes from soil organisms that are present in the soil in various stages of decomposition. The quantity and quality of organic matter are extremely important for soil health to provide essential nutrients, increase water retention capacity, improve soil aggregation and aeration, prevent erosion, and promote soil biodiversity.

Soluble Salts:



All soils contain some salts, which are essential for plant growth. However, excess salts will hinder plant growth by affecting the soil-water balance. Soils containing excess salts occur both naturally and because of soil use and management. Salinity of the soil solution is a reference to the number of ions dissolved in the soil water. Salinity is typically indicated by total dissolved solids (TDS), which are combined total solids dissolved in water. In the water solution extracted from a soil sample, TDS range from <500 to >1000 ppm.

Heavy Metals:



Contamination of soil with heavy metals (arsenic, lead, cadmium, chromium, mercury, nickel, etc.) can be a serious environmental problem with harmful effects on plants and crops. High levels of these heavy metals can be toxic (depending on a plant type). This is essential to test for these metals before planting to ensure safe gardening and healthy produce. We use a portable x-ray fluorescence (XRF) analyzer that allows measuring heavy metals in the soil to determine if they exceed the recommended thresholds.

Additional Resources:

- [FAO soils portal](#)
- [EPA Growing Gardens in Urban Soils](#)
- [USDA Heavy Metal Soil Contamination](#)