

Name _____

Lab – Measuring Soil Condition

The major essential nutrient elements supplied to plants through the soil are nitrogen, phosphorus, and potassium. Soil sampling is the first step in successful soil fertility management. We will be testing our soil samples from Acacia for pH, nitrogen, phosphorus, and potassium using soil test kits.

Soil Preparation

1. Spread out the composite sample on a clean sheet of paper or plastic.
2. Allow the soil to dry several hours or overnight.
3. Remove foreign matter such as leaves, twigs, and stones.
4. Gently crush soil to remove lumps.
5. Sift the sample through a screen or flour sifter to give a uniform sample.

pH - The pH scale is a numerical system used to measure the acidity or alkalinity of a soil. Plants will not thrive if the soil is either too acid or too alkaline, because the soil pH directly affects the availability of mineral nutrients.

1. Find the color chart for pH.
2. Follow the instructions for pH Test in LaMotte Soil Test Kit Garden Guide.
3. Record your pH in the Data Table

Available Phosphorus (P) - Young plants absorb large amounts of phosphorus, which speeds seedling development and promotes early root formation. Rapid early growth means hardier, stronger plants. In mature plants, phosphorus is vital to the development of healthy seeds and fruit. Phosphorus generally limits plant growth. It is depleted through harvesting of crops. Leaching does not really occur because it binds easily to clay particles. It does not generally run-off unless excess fertilizer is applied, sometimes causing algal blooms.

1. Find the color chart for Phosphorus.
2. Follow the instructions for phosphorus Test in LaMotte Soil Test Kit Garden Guide.
3. Record your phosphorus level in the Data Table

Available Nitrogen (N) - Nitrogen is a part of every cell. As a component of amino acids, the building blocks of protein, nitrogen is a vital link in the world's food supply. It stimulates above-ground growth and produces the rich green color characteristic of healthy plants. Soil nitrogen is depleted through harvesting of crops, leaching by rain water and irrigation, and denitrification.

1. Find the color chart for Nitrogen.
2. Follow the instructions for nitrogen Test in LaMotte Soil Test Kit Garden Guide.
3. Record your nitrogen level in the Data Table

Available Potassium (K)- Potassium acts as a catalyst, a chemical agent which facilitates a number of chemical processes in the plant. Potassium facilitates a number of plant processes. It strengthens natural mechanisms for the resistance of disease and extremes of weather.

1. Find the color chart for Potassium.
2. Follow the instructions for Potassium Test in LaMotte Soil Test Kit Garden Guide.
3. Record your potassium level in the Data Table

Data Collection

	Field Soil	Forest Soil
pH		
P		
N		
K		

Analysis

- A. Using the Garden Guide Manual, page 10 and 14, determine how much of each type of nutrient needs to be added for ideal plant growth for pH use Group B plants since Acacia has oak and pine trees.

pH –	N –
P –	K –

- B. Are your results different between field soil and forest soil? Give an explanation why that might be the case.

- C. If a sample had been taken from the “greens” or “fairway” area, do you think the results might have been different? Why?

- D. Using our book or the fold-over you made with the nitrogen nutrient cycle, list the processes at work to make nitrate available to plants.

- E. Using your book, identify 2 other chemical properties of soil and 2 biological properties and explain what they are and why they are important.