

**Title: Soil pH**

**Introduction:** Soils usually have pHs between 4.5 and 8.5. Soils at pH = 4 to 5 are very acid or “sour” and only a few plants will grow in them. Likewise, soils over 7.8 are too alkaline or “sweet” for most plants to thrive. Most vegetables, field crops, fruits, and flowers do best in soils that have a pH of 6.5 to 7 (very slightly acid to neutral).

Soil pH is one of the most important soil properties because it affects the availability of nutrients. Plants need nutrients like iron, nitrogen, phosphorus and potassium to grow properly. The majority of atoms that make up a plants body come from the air in the form of carbon dioxide but they do need micro- and macronutrients from the soil.

In optional pH ranges, the trace nutrients are more readily available to plants, and microbial populations in the soil increase. Microbes convert nitrogen and sulfur to forms that plants can use. Soil chemistry is remarkably complex!

**Materials:**

- soil (1/3 cup) - per group
- acid-base or pH indicator paper - 1 vial
- filter paper or coffee filter - per group
- plastic cup - per group
- boiled and cooled distilled water
- waste container

**Procedures:**

1. Lay a strip of acid-base or pH indicator paper in the bottom of a plastic cup or beaker.
2. Place a piece of filter paper or a coffee filter over the indicator paper. The edges of the filter should form a cup shape within the plastic cup.
3. Put the soil sample into the cup formed by the filter.
4. Add enough of the boiled, cooled water to moisten the soil without soaking it.
5. Let sit for 5 minutes. During this time, the water should move through the soil and filter and reach the indicator paper. The acid- base or pH character of the soil will be transferred to the water.
6. Invert the cup over a container to catch the soil. Check the indicator paper to determine the acid-base character or pH of the soil.



