

CASE

*Curriculum for Agricultural
Science Education*

Principles of Agricultural Science – Plant

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The Problem with pH

Unit 2 – Mineral Soils
Lesson 2.2 Soil Chemistry

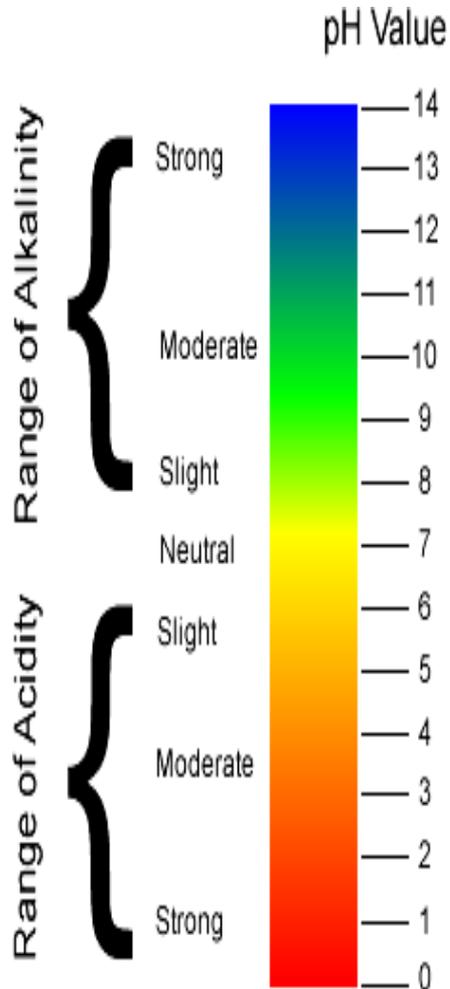
What is pH?

-  **pH** is the measure of acidity or alkalinity in a soil, based on the balance of hydrogen ions (H^+) and hydroxyl ions (OH^-).
-  **Acid:** substance with a pH value less than 7.0; caused by a higher concentration of hydrogen ions (H^+).
-  **Alkaline:** substance with a pH value greater than 7.0; caused by a higher concentration of hydroxyl ions (OH^-).

pH: The Sweet and Sour of Soil

-  Acidic substances are sour, such as lemons and vinegar.
-  Alkaline, or basic, substances are rather bitter, such as sea water and baking soda. But compared to acids, alkaline substances are referred to as sweet.

pH Scale



- Measured on a scale of 0 - 14.
- 7.0 is neutral.
- Each pH point multiplies the pH factor by 10.
- For example:
 - A pH of 5.0 is 10 times more acidic than pH 6.0 and 100 times more acidic than pH 7.0.

Who cares about pH?



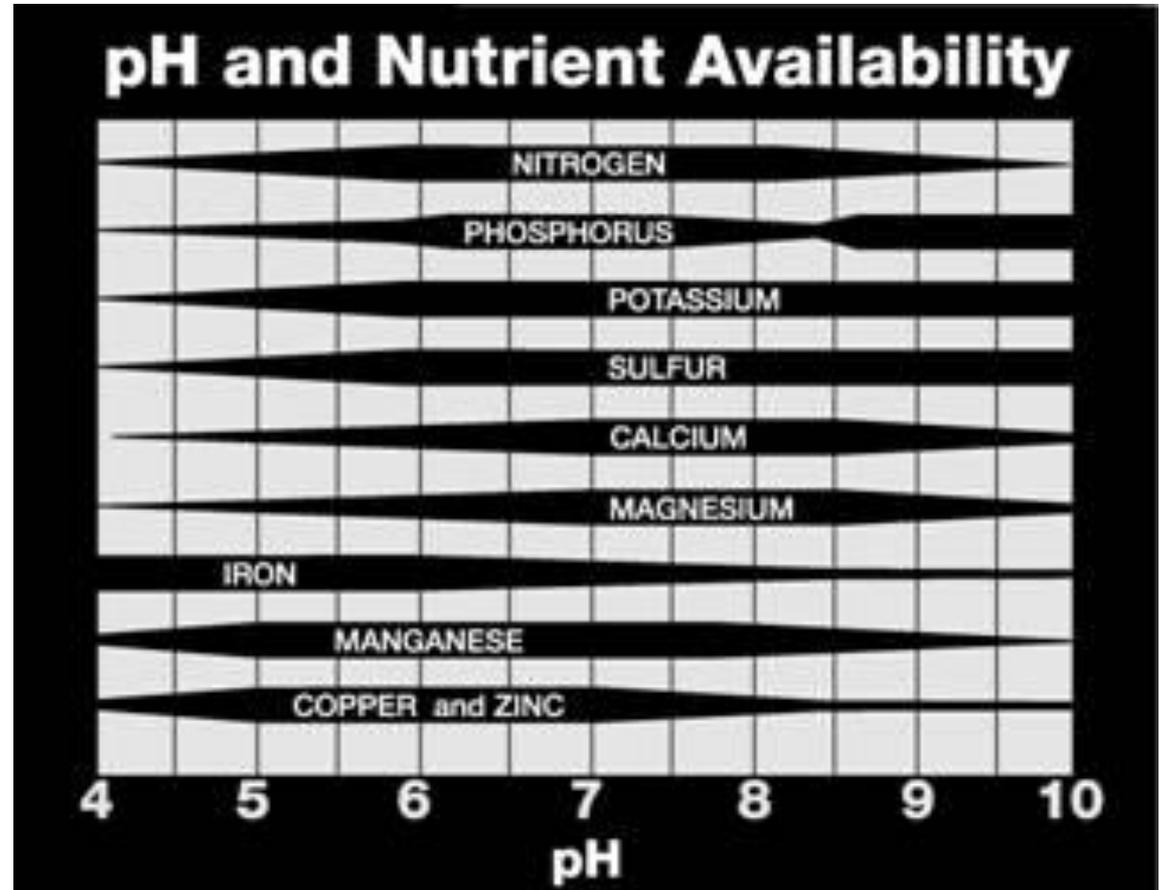
Soil pH is important to horticulturalists and crop producers because of its influence of nutrient availability in the soil.

- At the ideal soil pH level, plants can uptake soil nutrients required for growth and health.
- Certain soil nutrients become unavailable at different pH levels.

Available Nutrients

Different plant nutrients are affected by pH levels

(The wider the bar the more available the nutrient is to the plant)



Redding, K., & Masterman, D. (2007).

Changing pH

- Low pH levels in soil can be changed by adding a buffer, such as lime to the soil. Lime raises soil pH to a more acceptable level.
- Soil pH can also be lowered by adding sulfur compounds to the soil.



References



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