

Chemical soil properties – Exercise C01

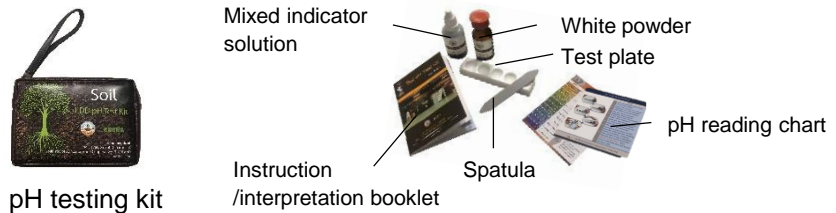
SOIL pH USING A UNIVERSAL COLORIMETRIC INDICATOR¹

Reference posters n. 12a-12b-12c

RELEVANCE

Soil pH is a soil chemical property playing a key role in regulating nutrient availability and other soil processes. Single nutrients are available for plant uptake at different soil pH, therefore different crops thrive at different pH values. Ranges of pH values between 5.5 and 7.5 are suitable for most of the crops because they can support a larger variety of nutrients. At pH values less than 7, the soil is acidic, whereas at pH values greater than 7, the soil is alkaline. Here, the pH testing kit developed and provided by the Department of Science for Land Development of Thailand is used to determine soil pH.

MATERIALS



PROCEDURE

1) Collect one or more soil samples. Place the samples into the test plate, make sure to fill only half of each spot with soil.





2) Add a few drops of mixed indicator on soil samples until saturation.



3) Mix soil and indicator thoroughly with the spatula. Add more indicator if needed.



PROCEDURE	4) Sprinkle the powder on soil samples and wait few minutes for the color to develop.	
	5) Compare the resulting color with the pH reading chart provided. Choose the closest match possible within 3 minutes and read the corresponding pH value.	
ADVANTAGES OF THE METHOD	Easy to determine, no specific knowledge required. Quite accurate. Different soil types can be compared in short times.	
LIMITATIONS OF THE METHOD	Only a limited number of readings are possible as reagents cannot be re-filled. Colors match can be subjective. Not suitable if exact pH value is needed.	
QUESTIONS TO BE ADDRESSED	What is the pH of tested soil? Is it too low or too high? What are the consequences for the crop? Is there a way to improve soil pH? Beside nutrient availability, what are the other properties that pH may affect?	

EVALUATION EXAMPLES (depending on the specific crop requirements)		
POOR	MODERATE	GOOD
pH values lower than 4 or higher than 8. Too acidic or too alkaline soil.	pH values lower than 5.5 or higher than 7. Slightly acidic or alkaline soil.	pH ranging from 5.5 to 7. Neutral soil.

¹ Soil testing method manual <https://www.fao.org/documents/card/en/c/ca2796en>