What's Your pH? Lab

Name: _____

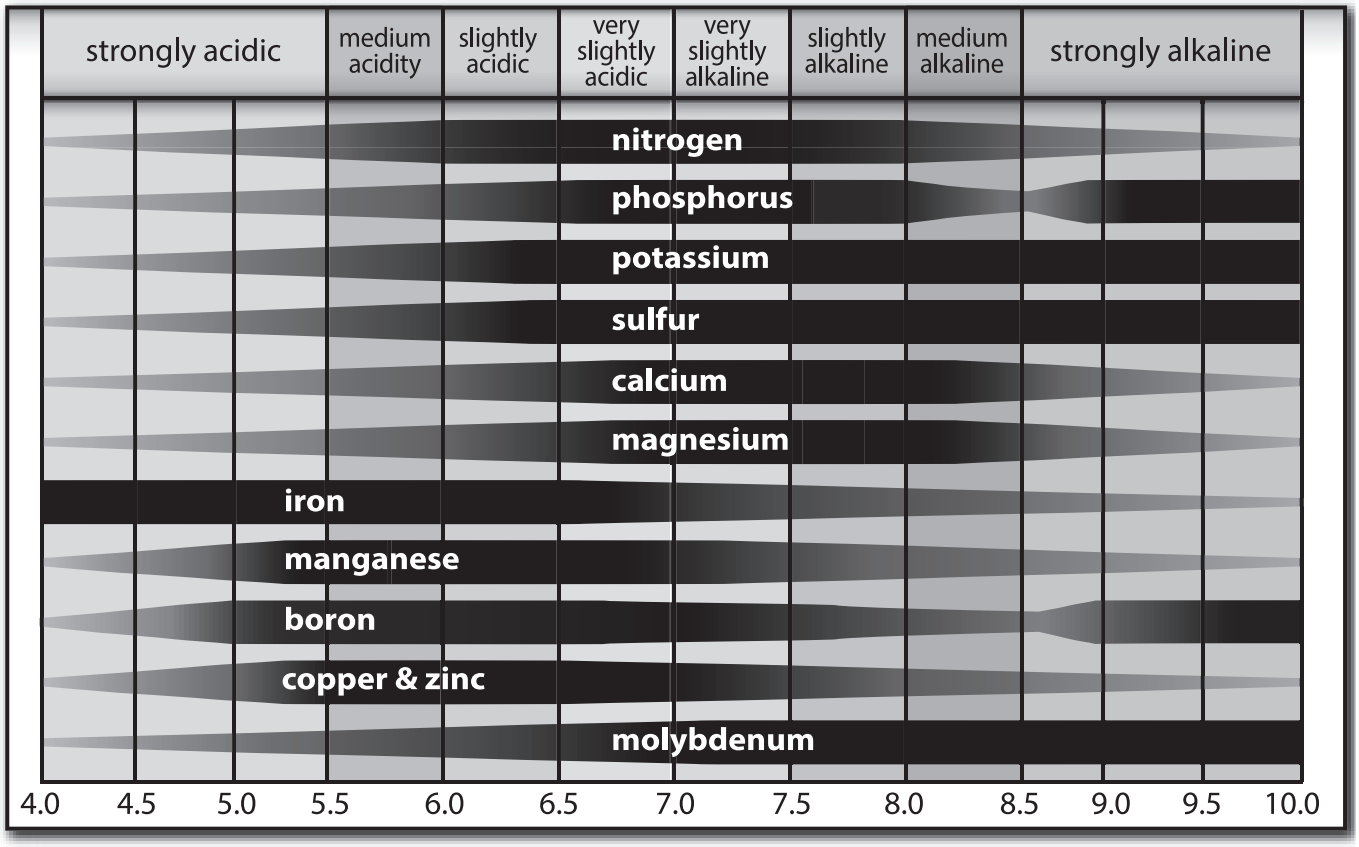
Introduction

Congratulations, you have a new job working as an agronomist for the University of California Cooperative Extension. Today, you are analyzing soil samples that were sent to you by local farmers. You will run a number of tests on the soil, but today you are concentrating on determining the soil pH. Soil pH is an important factor in the nutrient availability for plants. Once you know the pH of the soil from the farmers' fields, you will explain test results to farmers and will recommend the appropriate soil amendments to help each farmer maximize their crop production.

Procedure

1. Work in pairs. There are three soil samples in the lab. Soil sample one is from farmer Alice, soil sample two is from farmer Benny, and soil sample three is from farmer Carlotta. Mark each of your three cups with the appropriate name or number and place one spoonful of soil from each farmer's field in the respective cup.
2. Make a soil slurry by measuring out approximately twice the amount of distilled water as the amount of soil you have in your cup. Your goal is to have a soil slurry that is approximately two parts water to one part soil. Mix up the slurry with your spoon or stirring stick.
3. Select a method for testing your soil pH and follow the directions for using that test. For the most accurate results, use all three methods and take an average. Record your results on the chart.
4. Clean up your lab area.
5. Compare your test results to the nutrient availability chart on the back of this handout. Use classroom resources or the Internet to research information and fill out the report for each farmer.

Nutrient Availablity at Different Soil pH Levels



Test Results

Farmer	Soil pH *using pH meter*	Soil pH *using pH test strip*	Soil pH *using soil pH test*	Average
Alice				
Benny				
Carlotta				

1. Based on a comparison to the nutrient availability chart:

   a. What nutrients might be limited in farmer Alice's field?

   _____

   b. What nutrients might be limited in farmer Benny's field?

   _____

   c. What nutrients might be limited in farmer Carlotta's field?

   _____

2. If needed, what method for amending soil pH would you advise for each farmer? When answering this question, consider the following factors: *(Internet research recommended)*

   - Cost of altering pH through addition of lime or elemental sulfur vs. cost of adding various nutrient amendments.
   - Cost of transportation and application of the amendment.
   - Options for growing crops best suited for existing soil pH.
   - Length of time needed for a measurable change in soil pH to occur.
   - Soil texture.
   - Form of the amendment: liquid, powder, or granular.

Farmer Alice

Add: _____

This recommendation is based upon the following facts:

_____

_____

_____

What other information might you need to know about the soil in farmer Alice's 25 acre field to provide instructions on the type and amount of soil amendment needed to change the pH? List at least two questions.

_____

_____

_____

_____

Farmer Benny

Add: _____

This recommendation is based upon the following facts:

_____

_____

_____

What other information might you need to know about the soil in farmer Benny's 25 acre field to provide instructions on the type and amount of soil amendment needed to change the pH? List at least two questions.

_____

_____

_____

_____

Farmer Carlotta

Add: _____

This recommendation is based upon the following facts:

_____

_____

_____

What other information might you need to know about the soil in farmer Carlotta's 25 acre field to provide instructions on the type and amount of soil amendment needed to change the pH? List at least two questions.

_____

_____

_____

_____

_____

List at least five crops that do well in slightly acidic soil:

_____

_____

List at least five crops that do well in slightly alkaline soil:

_____

_____