

# Soil nutrient testing

<b>Focus question</b>	What nutrients are found in soil? What effects do the nutrients in soil have on plants?
<b>Vocabulary</b>	pH, phosphorus, nitrogen, potassium

## Materials

- 100 ml of soil
- Soil sieve or wire mesh colander
- LaMotte complete soil test kit

## Procedure

1. For day 1, spread out the soil, break apart any soil clumps, and remove large sediments (gravel/rocks) and organic matter such as leaves, etc. Allow the soil to dry for several hours or overnight.
2. Push the dry soil through a soil sieve or colander to break up soil particles. Mix the dry soil to be used for testing.
3. For day 2, use the LaMotte complete soil test kits to determine the pH and the level of N, P and K in your soil samples. Create a data table to record your results.

## pH test

1. Fill the test tube to line 4 with pH Indicator. Squeeze bottle gently to control the amount dispensed.
2. Use 0.5g spoon to add 3 measures of soil sample.
3. Cap and mix gently for 1 minute.
4. Allow tube to stand for 10 minutes to allow soil to settle.
5. Match color reaction with pH color chart and record result.

## Nitrogen test

1. Fill test tube to line 7 with Nitrogen-extracting solution.
2. Use 0.5g spoon to add 2 measures of soil sample.
3. Cap and mix gently for 1 minute.
4. Remove cap and allow soil to settle.
5. Use a clean pipette to transfer the clear liquid to a second clean test tube. To avoid agitation of soil, squeeze bulb of pipette before inserting tip into liquid. Release bulb slowly to draw clear liquid into pipette. Do not pull up any soil.
6. Fill second test tube to line 3 with liquid.
7. Use 0.25g spoon to add 2 measures of Nitrogen Indicator powder to soil extract in second tube.
8. Cap and gently mix. Wait for 5 minutes for pink color to develop above the powder.
9. Match test color with Nitrogen color chart and record result.

## Phosphorus test

1. Fill test tube to line 6 with Phosphorus-extracting solution.
2. Use 0.5g spoon to add 3 measures of soil sample.
3. Cap and mix gently for 1 minute.
4. Remove cap. Allow to stand, and soil to settle, until liquid above soil is clear.
5. Use a clean pipette to transfer the clear liquid to a second clean test tube. To avoid agitation of soil, squeeze bulb of pipette before inserting tip into liquid. Release bulb slowly to draw clear liquid into pipette. Do not pull up any soil.
6. Fill second tube to line 3 with clear liquid.
7. Add 6 drops of Phosphorus Indicator reagent to soil extract in second tube.
8. Cap and mix.
9. Add one Phosphorus test tablet.
10. Cap and mix until tablet dissolves. A blue color will develop.
11. Match color reaction with Phosphorus color chart and record result.

## Potassium test

1. Fill test tube to line 7 with Potassium-extracting solution.
2. Use 0.5g spoon to add 4 measures of soil sample to test tube.
3. Cap and shake vigorously for 1 minute.
4. Remove cap and allow soil to settle.
5. Use a clean pipette to transfer the clear liquid to a second clean test tube. To avoid agitation of soil, squeeze bulb of pipette before inserting tip into liquid. Release bulb slowly to draw clear liquid into pipette. Do not pull up any soil.
6. Fill second test tube to line 5 with liquid.
7. Note: If additional extract is needed to fill the tube to line 5, repeat steps 1 through 4.
8. Add 1 Potassium indicator tablet to soil extract in second solution.
9. Cap and mix until tablet dissolves. A purplish color will appear.
10. Add Potassium test solution, 2 drops at a time, keeping count. Mix contents after each addition. Stop adding drops when the color changes from purplish to blue.
11. Use the Potassium end point color chart in the LaMotte complete soil test kit instructions as a guide in reading this color change. Keep an accurate count of the number of drops added. Read test result from the table and record.

### Data table

Sample location:

Component	Level (units)
pH	
N	
P	
K	

### Potassium end point color chart

Number of Drops Added	Potassium [Potash] Level
0-8	Very High
10	High
12	Medium High
14	Medium
16	Medium Low
18	Low
20 or more	Very Low

Low	0-120 lbs/Acre
Medium	120-200 lbs/Acre
High	+200 lbs/Acre

