

# Soil Fertility Protocol

## Lab Guide

### Task

To obtain three soil fertility readings for every horizon in a soil profile

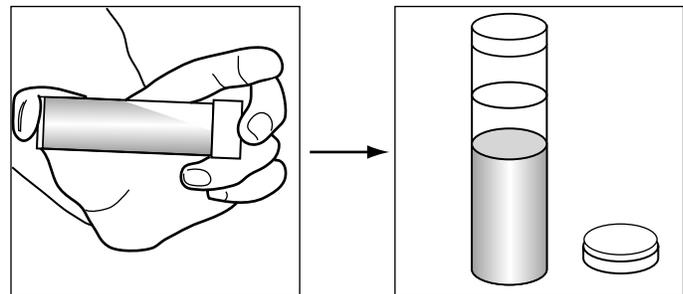
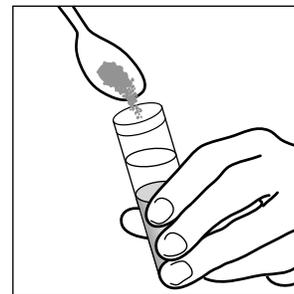
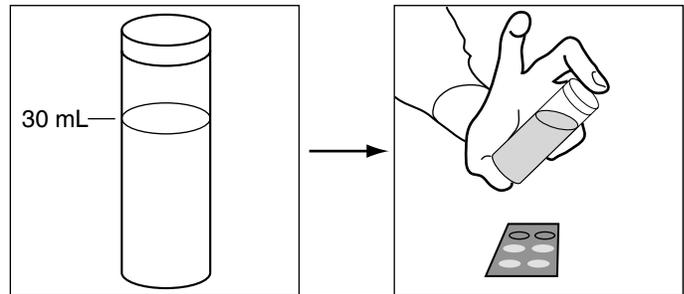
### What You Need

- Dried sieved soil
- Soil Fertility Data Sheet
- Plastic teaspoon
- GLOBE NPK test kit or equivalent kit (that measures the relative amount of nitrate, phosphate, and potassium in a soil sample)
- Distilled water
- Pencil or pen
- Latex gloves
- Goggles

### Part 1. Nutrient Extraction:

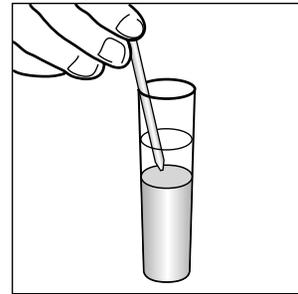
1. Fill the extraction tube from your Soil Test Kit to the 30 mL line with distilled water.
2. Add 2 Floc-Ex tablets. Cap the tube and mix well until both tablets have disintegrated.
3. Remove the cap and add one heaping spoonful of dry, sieved soil.
4. Cap the tube and shake for one minute.
5. Let the tube stand until the soil settles out (usually about 5 minutes). The clear solution above the soil will be used for the nitrate nitrogen (N), phosphate phosphorus (P), and potassium (K) tests.

**Note:** For some soils, especially those high in clay, there may not be enough clear solution extracted. If more clear solution is needed, repeat steps 1-5.

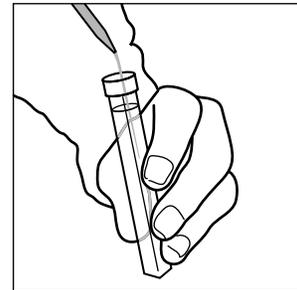


**Part 2. Testing for Nitrate Nitrogen:**

Use the pipette to transfer the clear solution above the soil to one of the test tubes in the Soil Test Kit until the tube is filled to the shoulder. (If more solution is needed, repeat Part 1).

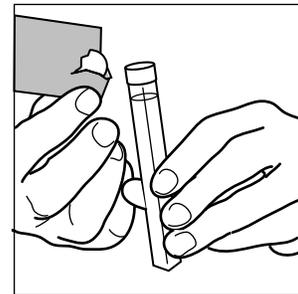


1. Add one Nitrate WR CTA Tablet. Be sure that all of the pieces of the tablet are added to the test tube and try not to touch the tablet as you place it into the tube.



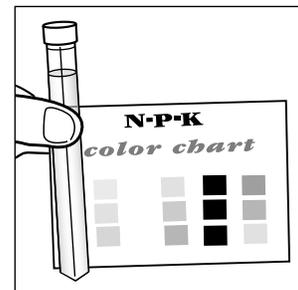
2. Cap and mix until the tablet disintegrates.

3. Rest the test tube in a cup or beaker. Wait 5 minutes for color to develop. (Do not wait longer than 10 minutes).



4. Compare the pink color of the solution to the Nitrogen Color Chart in the Soil Test Kit.

5. Record your results (High, Medium, Low, or None) on the *Soil Fertility Data Sheet*.

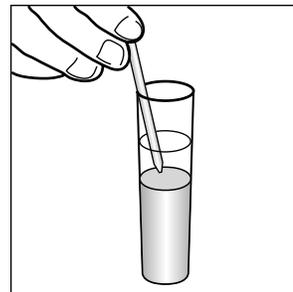


6. Discard the solution and wash the tube and the pipette with distilled water.

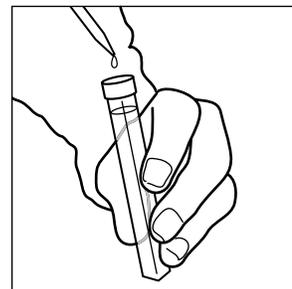
7. Repeat this procedure with the liquid from each of the soil samples. Be sure to rinse the pipette and tube with distilled water after they are used.

**Part 3. Testing for Phosphate Phosphorus:**

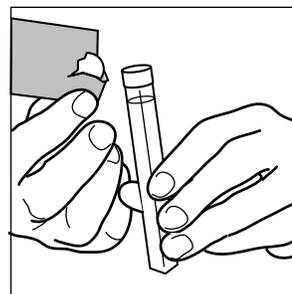
1. Use the clean pipette to transfer 25 drops of the clear solution above the soil to a clean test tube. (If more solution is needed, repeat Part 1).



2. Fill the tube to the shoulder with distilled water.



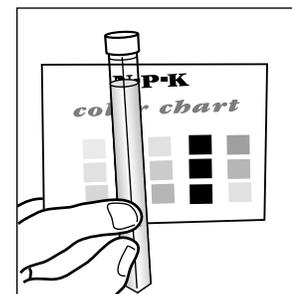
3. Add one Phosphorus Tablet to the tube and cap it. Be sure that all the pieces of the tablet are added to the test tube.



4. Mix until the tablet disintegrates.

5. Rest the test tube in a cup or beaker. Wait 5 minutes (but no more than 10 minutes) for color to develop.

6. Compare the blue color of the solution to Phosphorus on the color chart in the Soil Test Kit.



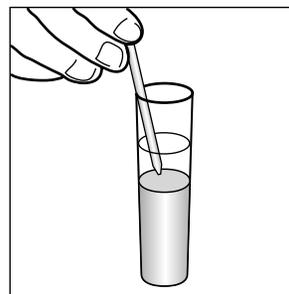
7. Record your results (High, Medium, Low, or None) on the *Soil Fertility Data Sheet*

8. Discard the solution and wash the tube and the pipette with distilled water.

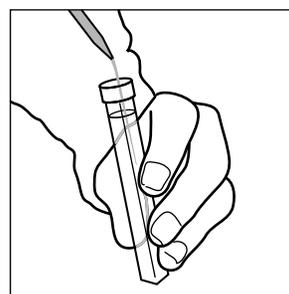
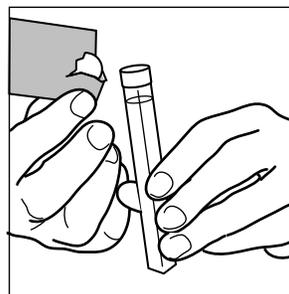
9. Repeat this procedure with the liquid from each of the soil samples. Be sure to rinse the pipette and tube with distilled water after they are used.

**Part 4. Testing for Potassium:**

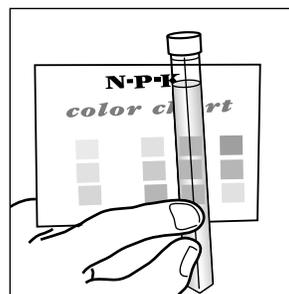
1. Use the clean pipette to transfer the clear solution above the soil to a clean test tube until it is filled to the shoulder. If more solution is needed, repeat Part 1.



2. Add one Potassium Soil Tablet to the tube. Be sure that all the pieces of the tablet are added to the test tube. Cap and mix until the tablet disintegrates.



3. Hold the tube over the black boxes in the left column of the K portion of the color chart. Look through the “cloudiness” of the solution in the test tube and compare it to the shaded boxes in the right column. Record your results (High, Medium, Low, or None) on the *Soil Fertility Data Sheet*.



4. Discard the solution and wash the tube and the pipette with distilled water.

5. Repeat this procedure with the liquid from each of the soil samples. Be sure to rinse the pipette and tube with distilled water after they are used.