

LESSON PLAN

Soil Chemistry

Grade band: 6-8 · Estimated time: 45 minutes

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Learning objective

Students test soil pH and nutrient content in three locations, interpret the results, and recommend amendments.

Standards alignment

- NGSS MS-LS2-3: Cycling of matter in ecosystems
- NGSS MS-ESS3-3: Design a method to monitor human impact on the environment

Materials

- Rapitest or LaMotte soil test kit (1 per group of 3)
- Distilled water
- Small trowels
- Sample bags labeled A/B/C
- Data table handout
- Access to a garden bed, a lawn, and a bare/compacted area

Lesson sequence

- In groups, collect soil samples from each of the three locations at a depth of 4 inches. Mix each sample and let it dry for 24 hours.
- Test each sample for pH, nitrogen, phosphorus, and potassium following the kit instructions.
- Record results in the data table. Compare across the three locations.
- Discuss as a class: which location is healthiest? Why? What would you add to fix the weakest one?
- Each group writes a one-page recommendation for the property owner.

Extension & assessment

Assess the written recommendation for correct interpretation of pH (6.0–7.0 for most vegetables), correct identification of nutrient deficiencies, and reasonable amendment suggestions (compost, lime, gypsum). Extend by applying amendments and re-testing after 30 days.