



HOMESCHOOL SCIENCE EXPERIMENT

TESTING THE EFFECT OF pH ON PLANT GROWTH WITH DIFFERENT SOILS

Plants grow best in certain soil conditions. Soil pH affects how well plants take in nutrients. In this experiment, you will test how different pH levels affect plant growth in different soils.

QUESTION

How does pH affect plant growth in different types of soil?

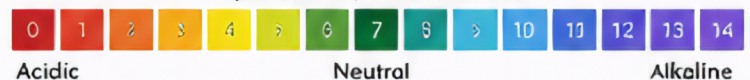
HYPOTHESIS

If the soil pH is _____,
then the plants will _____
because _____.

MATERIALS

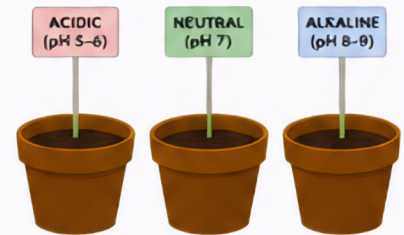
- 3 types of soil (e.g., potting soil, garden soil, sandy soil)
- pH test kit or pH test strips
- White vinegar (to lower pH)
- Baking soda (to raise pH)
- Water
- 9 small pots or cups (with drainage holes if possible)
- Same type of seeds (e.g., bean, radish, or grass seed)
- Ruler
- Labels or marker
- Notebook or data sheet

pH Scale (for reference)



EXPERIMENT SETUP

1. You will test 3 soil types at 3 different pH levels: acidic, neutral, and alkaline.
2. This makes 9 pots total (3 soils $\times$ 3 pH levels).
3. Adjust the soil pH as follows:
 - **Acidic:** Add a small amount of vinegar mixed with water. Stir and test pH to reach about 5–6.
 - **Neutral:** Add water only. Adjust to about pH 7.
 - **Alkaline:** Add a small amount of baking soda mixed with water. Stir and test pH to reach about 8–9.
4. Plant the same number of seeds in each pot.
5. Water all pots with the same amount of water daily.
6. Place all pots in the same location with the same light conditions.



PROCEDURE & DATA TABLE

Record your observations daily for 2–3 weeks.

Soil Type	pH Level (Target)	Actual pH (After Adjusting)	Plant Height (cm)					Observations (Leaf color, growth, etc.)
			Day 3	Day 7	Day 10	Day 14	Day 21	
Potting Soil	Acidic (5-6)							
	Neutral (7)							
	Alkaline (8-9)							
Garden Soil	Acidic (5-6)							
	Neutral (7)							
	Alkaline (8-9)							
Sandy Soil	Acidic (5-6)							
	Neutral (7)							
	Alkaline (8-9)							

ANALYSIS QUESTIONS

1. Which pH level resulted in the best growth in each soil type? _____
2. How did pH affect plant growth differently in the different soils? _____
3. What do your results suggest about the relationship between soil pH and plant growth? _____
4. If you were to grow plants in your garden, what pH would you aim for and why? _____



CONCLUSION:
