

# CARBON DIOXIDE PRODUCTION IN SOIL MICROBIAL COMMUNITIES



**Overview:** This activity examines how soil microbes, such as bacteria and fungi, are involved in carbon cycling. To measure carbon dioxide production from microbial respiration, soil samples are placed in sealed mason jars with a tube containing a “carbon trap” solution. Students design experiments to explore the relationship between microbial respiration and soil variables such as temperature, habitat, soil type, and agricultural management choices.

## LEVELS

6 through undergraduate

## SUBJECTS

Science, Environmental Studies

## OBJECTIVES

Students will:

- Describe some of the microbes found in soil.
- Recognize and describe factors which affect the respiration rate of soil microbes
- Design, conduct and analyze an experiment to measure the rate of cellular respiration in soil under different conditions.
- Explain the relationship of soils to above ground food webs and the carbon cycle.

## MATERIALS

Carbon Dioxide Production in Soil Microbial Communities Package

## ACTIVITY TIME

Minimum of five 50-minute class periods spread out over a one to two week period.

## STANDARDS

AAAS Project 2061:

1B The Nature of Science:  
Scientific Inquiry

5E The Living Environment: Flow  
of Matter and Energy

8A The Designed World:  
Agriculture

AAAS. 1993. *Benchmarks for Science Literacy: Project 2061.* Oxford University Press. New York

