

Topics

Environments, Natural Resources, Microbes, Data Collection and Analysis

Materials

- ✓ 4 plastic bags, 3x3", zip lock
- ✓ 4 bottle caps, metal or plastic, for samples
- ✓ Test samples (e.g., waste food scraps)
- ✓ Adhesive strips or file labels
- ✓ hand lens
- ✓ Optional: Lab notebook for data collection

Learning Standards

NGSS: Cycles of Matter, Roles of Decomposers, Ecosystems and Populations

Breaking it Down

Exploring Decomposition



Explore how organic materials break down and decompose in this experiment that investigates materials, environmental factors, and variables.

To Do and Notice

1. Place pairs of small food samples into caps to test for decomposition. Each experimental pair should contain the same sample material.
2. Decide on the variable to test for each pair. For example, one sample can contain added water while the second sample remains dry. Other variables to test include light, temperature, added moisture, and added disinfectant.
3. Place each cap with a sample inside a small bag. Seal the bag closed and secure the closure with an adhesive strip or file label. **Safety Note:** Once sealed, the bags should **NOT** be opened again! Repeat steps 1-3 for each sample pair.
4. Label the adhesive strip/label with date, contents, and an identification number.
5. Place the plastic bag in an appropriate location. Make and record observations every day for 7-10 days. Look for dark, fuzzy-looking circles on the sample surface. These circles are types of fungi called **molds**, multi-cellular organisms that grow from highly resistant spores.
6. Take careful notes of observed sample changes each day. Include variations in texture, number of mold colonies, and overall appearance.
7. When the experiment is done, place all the sealed samples into a larger storage bag, close it, and throw it away. **DO NOT OPEN THE MOLD CULTURES!**

The Science Behind the Activity

All living and non-living components of an environment are interconnected; plant varieties, animal populations, rock types and sizes, water levels, and microbial life all contribute to a healthy and thriving ecosystem. Organic matter decomposes over time; materials are broken down, recycled and reused by other components of the environment. Decomposers, including insects, molds and fungi, and bacteria feed on non-living organic material. The time required to decompose any given item depends on environmental factors, including temperature, moisture, and local population of decomposers. Microbes were the first life on planet Earth (first appearing as early as 3.8 billion years ago). They can survive in the harshest environments! Many microbes help humans, such as yeasts that we use to make bread and molds that we use to make antibiotics.

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