# A Slice of Soil

**Grade Level: K-3**

**Approximate Length of Activity: One class period**

## Objective

### Teacher

1. Teach the importance of the earth's surface.
2. Teach the value of the soil on Earth.

### Students

1. Learn how much land exists on Earth.
2 Learn how much of the land is usable for growing food and fiber.

**Michigan Content Standards: (Social Studies) K-G5.0.1; 1-G5.0.1; 1-G1.0.4; 1-C5.0.1; 2-G4.0.1; 2-G5.0.1; 2-G5.0.2; 2.E1.0.4; 3-G5.0.1; 3-G5.0.2**

## Introduction

One of the most important natural resources that covers much of the earth's land surface is soil. Most life on earth depends upon the soil as a direct or indirect source of food. Plants are rooted in the soil and obtain nutrients (nourishing substances) from it. Animals get nutrients from plants or from animals that eat plants. The contents of soil change constantly and there are many different kinds of soils. It forms very slowly and is destroyed easily, so it must be conserved in order to continue to support life. We are unable to use all of the earth's surface for food production because some of it is covered by deserts, swamps, ice, mountains or other areas not suitable for plant growth. Michigan has 10.1 million acres of farmland.

Soil conservationists and farmers work to insure the wise use of soil. Wise use of farmland involves maintaining a high level of nutrients and organic matter in cultivated soils. Farmers add organic matter to the soil by plowing under certain green plants. They also add fertilizers and rotate crops to replace nutrients that leaching and growing plants remove. Farmers practice no-till farming to conserve the soil.

Livestock farmers also are careful to control soil erosion on their land by limiting the grazing on their land. Lands that have been overgrazed also suffer from erosion. Ranchers conserve grazing lands by limiting the time that their herds graze in one area. Forest lands must also be protected from erosion. Foresters leave unusable branches and other parts of trees on the forest floor to add organic matter to the soil.

Our food producing land remains the same and yet the world population continues to grow. Consequently, each person's food portion becomes smaller and smaller. It is the responsibility of each generation to use the soil wisely to ensure the future. The following demonstration will show how little of the earth's surface is actually used for food production as compared to growing populations.

## Materials Needed

- Globe or map
- Apple
- Knife
- If available, pictures of land formations including groves, mountains, fields, deserts, etc.

## Activity Outline

1. At desks or group settings, discuss our planet Earth. Discuss uses of land and land that might not be usable.
2. Bring out the globe or map and show water and land. Discuss the need for both. When this seems clear, go into the lesson.
3. Cut apple into four equal parts-three parts represent the oceans of the world, and one part represents total land areas. Plants that produce food cannot grow in water. Therefore, set three quarters aside.
4. Cut the land section in half lengthwise. Now you have two 1/8th pieces. One section represents land such as deserts, swamps, Antarctic, arctic and mountain regions. The other 1/8th represents land where man can live but may not grow food.
5. Slice this 1/8th crosswise into four equal parts. Three of these 1/32nd sections represent the areas of the world which are too rocky, too wet, too hot, or where soils are too poor for production, as well as areas developed by man. Developed areas include roads, homes, office buildings, etc.
6. Carefully peel the last 1/32nd section. This small bit of peeling represents the soil on earth which all mankind depends for a food source.

## Discussion Questions

1. Ask students about the globe or map and let them explain which is water and which is land.
2. Let them describe what kind of different land formations exist. (mountains, valleys and deserts-which land formations are suitable for food growth?)
3. Have students explain why having land that is usable is important.
4. Have students talk about how land could possibly be changed to be either usable or not usable for food production.

## Related Activities

1. Soil! Get the Inside Scoop, Soil Science Society of America, 677 South Segoe Road, Madison, WI 43711, 608-273-8080, www.soils.org.

## Book Resources

1. "The Science of Soil" by Jonathan Bocknek
2. "Dust Bowl Diary" by Ann Marie Low