



A SLICE OF SOIL

discovering the demand for soil

OUTWIT OUTGROW
SEED SURVIVOR
OUTLIVE sponsored by Agrium

activity: grades 2 to 4



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Overview An apple is used to model the earth. Students learn that just $1/32$ of its surface is devoted to farmland. Discuss what sacrifices may be needed to feed a larger population.

Major Concepts

- Only a small portion of the earth's surface is used to grow food.
- The world population is growing at a steady rate.

Objectives By the end of the activity students will be able to:

- recognize that farmland is a finite resource; and
- appreciate that the world's growing population demands increase in food productivity.

Teacher Background In partnership with Alberta Agriculture and Rural Development, Agrium created a series of videos and worksheets on soil and its many uses. These can be found on an independent website www.SoilQuest.ca. Teachers will also find a land debate activity on this site (appropriate for Grade 6+.)

Activity Time 25 minutes

Materials Required For the class: 1 apple 1 knife



Procedure

1. Explain to the class that this activity demonstrates how we as a society use land. The amount of land on Earth stays the same, so as the world's population gets larger, it becomes even more important that we make wise decisions about how it is used.

2. Call attention to the apple and the knife. Explain that the apple represents the Earth. Ask, "How much of the Earth's surface do you think is devoted to growing the food we eat everyday?"

Students' responses will vary. Some will remember that about 70 percent of the surface is water.

3. Use the knife to cut the apple into four equal parts. Set three parts aside and hold up one part. Explain that the surface of the world is about 70 percent water, so this one piece represents that part of the surface that is land.

4. Explain that land is used for many different reasons. Ask, "What are some of the most important uses for land?" Write students' responses on the board.

Students' responses may include the following:

- Farming
- Homes
- Industries or businesses
- Pastures or land for livestock
- Parks, recreation and sports
- Mining
- Habitat (mountains, jungles, deserts, beaches and tundra)

If a student does not mention one of these uses, ask guiding questions to bring uses out. Students may point out that some land such as a desert has no use. Of course any land that is not being used by humans can be considered a habitat for wildlife.

5. Explain that the earth is covered in topsoil that contains all the living and non-living things plants need to grow. Once this is scraped off or depleted of life, it will no longer be able to grow food. The topsoil is like the skin of the apple and proportionately about as thick. Peel off a little slice of one of the other apple wedges to demonstrate this point.

Topsoil is scraped off to build roads and buildings to reveal the more compact layer of subsoil underneath.

6. Cut the apple into four equal parts. Three parts represent the oceans of the world. The fourth part represents the land area.

7. Cut the land section in half lengthwise. Now you have two $1/8$ pieces. One section represents land such as deserts, swamps, Antarctic, Arctic and mountain regions. The other $1/8$ section represents land where we all live and play.

8. Slice this $1/8$ section crosswise into four equal parts. Three of these $1/32$ sections represent the areas of the world that are too rocky, too wet, too hot, or where soils are too poor to grow food. Ask students if they know of regions where the soils might be too drained to grow food. Also, we can't grow food on some land because cities and other human built structures are on it.

9. Hold up the last $1/32$ section. The peel on this small piece represents the amount of soil on which we have to grow food. This amount of soil will NEVER get any bigger.

10. Explain that because we put land to so many different uses, the amount devoted to farming has hardly changed during the past 50 years. Scientists are worried about how we will feed the world's growing population in the next 50 years.

Class Discussion Can include options for the future. How can we take care of the soil in our garden to protect it? What about farms, how do we protect this soil? How can we protect soil around the world? Why is this important?

