



# SAVE OUR SOIL

**GRADE LEVEL:** 4-5

**SUBJECT:** Math

**NATIONAL STANDARD(S):**

(3-5) MA: 2.2, 2.10, 3.6, 3.12, 4.1, 4.7, 4.16, 6.6, 6.8

**THEME:** Conservation

**FOOD AND FIBER TOPIC:** I-A; III-D

## LEARNER OBJECTIVES:

1. The student will gain an understanding of the small amount of soil available to sustain humans on earth and will complete an appropriate graph or chart from collected data.

## VOCABULARY

*acre*—A unit of land measure used in England and the U. S. which is equal to 43,560 square feet.

*arable*—Fit for cultivation, as by plowing.

*pollutant*—A substance which causes physical impurity.

*soil*—The mineral and organic surface of the earth capable of supporting upland plants.

## BACKGROUND

All living things depend on soil to live. If we had no soil we would have nothing to eat. Soil that can be used for growing food is called arable land. Every year we lose thousands of acres of arable land.

Some of the land is lost because we need more houses for people. Quite a bit of land gets paved over every year for parking lots and shopping malls. Some is poisoned by industrial waste and other pollutants. Some of the land blows or washes away and some of it just gets used up from producing food year after year.

The world's population is expected to double in the next 40 years. Since we are getting more and more people at the same time we are losing more and more arable land, each person's portion of food is getting smaller. It may not seem your portion is getting smaller, but if you pay attention to what is happening in countries around the world, you will see many people don't get enough to eat. It's very important we take good care of the soil we have left so we and the other people in the world don't go hungry.

## STEP-BY-STEP INSTRUCTIONS

1. Bring a large apple and a paring knife to class. Share background materials, then explain to your students the apple represents the world.
2. Cut the apple into four equal parts. Tell students three parts represent the oceans of the world, and the fourth part represents the land area.
3. Cut the land section in half, lengthwise. Now you have two  $\frac{1}{8}$  pieces. Explain that one section represents land which can't be used for producing food: deserts, swamps, mountains and the Arctic and Antarctic regions. The other  $\frac{1}{8}$  section represents the land where man can live. Slice this  $\frac{1}{8}$ -section lengthwise into four equal parts. Now you have four  $\frac{1}{32}$  sections. The first section represents the areas of the world which have

rocky soil that is too poor for any type of food production. The third section represents areas that are too hot for food production. The last section represents the area developed by man.

4. Carefully peel the last 1/32 section. This small bit of peeling represents all the soil of our earth on which humans depend for food production.
5. Lead a discussion with the following questions:
  - What would happen if the sliver of topsoil we use for food production should suddenly wash into the ocean or become polluted by chemical warfare?
  - What will happen if the world's population continues to grow, while the amount of top soil continues to grow smaller?
  - What can you and your family do to help conserve precious soil in your own backyard? (Compost food scraps and yard waste to help build soil; insist local officials make responsible decisions about urban development; grow some of your own food, encourage your parents to carpool or support mass transit systems to cut down on the need for parking lots; urging farmers in your area to practice good soil conservation, etc.) What about you and your classmates on your school grounds?

### **RELATED ACTIVITIES**

1. Invite a local soil conservationist into your classroom to discuss what special things are being done to save the soil.
2. Start a school compost pile to help revitalize the soil around the school. When the compost is "done," spread it out on trampled ground, or mix it into a flower bed.
3. On a world map, have students locate some of the countries they have heard about where people don't have enough to eat (third world countries like Somalia, Ethiopia, some eastern European countries and even some parts of the US). Have them research the countries and find out the reasons for the food shortages (climate, politics, shortage of arable land, lack of money, etc.)

### **RESOURCES**

#### ***Student Books***

- Bourgeois, P. (1990). The Amazing Dirt Book. Wesley-Addison.
- Cobb, V. (1981). Lots of Rot. Harper Collins.
- Delton, J. (1992). Pee Wee Scouts #16 Trash Bash. Dell.
- Seuss, Dr. (1971). The Lorax. Random House.
- Stille, D. R. (1990). Soil Erosion and Pollution, A New True Book. Children's Press.

#### ***Teacher Resources***

- Riverside-Corona Resource Conservation District, 2023 Chicago Ave., B-14, Riverside, CA 92507-2305 (eight-page activity packet with hands-on soil projects. Minimal charge to teachers outside the district).
- Soil Conservation Service, USDA PO Box 2890, Washington, DC 20013.
- "Soil Erosion By Wind," Soil Conservation Service, 1345 Main St., Red Bluff, CA 96080 (22 hands-on lessons teaching the concepts of soil erosion and the importance of conservation.

#### ***Related Internet Websites***

- Natural Resource Conservation Education. Education and Conservation Partners for a Brighter Tomorrow. This website is designed to help people of all ages understand and appreciate

natural resources and learn how to conserve them.

<http://www.fs.fed.us/outdoors/nrce/welcome.htm>

Science Mini Lessons. <http://yn.la.ca.us/cec/cecsci/sci-elem.html>

Science and Math Consortium for Northwest Schools. K-12 education in science and mathematics. <http://www.col-ed.org/ak/>

Environmental Education Website: mission is to spread information and ideas that will help educators explore the environment and investigate current issues with students.

<http://www.nceet.snre.umich.edu/>

Bureau of Land Management Environmental Education.

<http://www.blm.gov/education/education.html>

## **EVALUATION**

Did the demonstration help students understand the importance of soil conservation? Did students participate in the discussion and come up with suggestions for soil conservation?

## **ACKNOWLEDGMENTS**

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