

K-12 IYS Activity



Summary

Desertification is the rapid loss of topsoil and loss of plant life on productive land in arid (dry) and semi-arid regions of the world. One-third of Earth's land area in more than 100 countries (including the United States) is at risk of desertification. The historic Dust Bowl of the 1920s and 1930s was a result of desertification caused by overgrazing and excessive tillage of Texas, Oklahoma, Kansas and Colorado.

Most desertification can be prevented—by following good farming and property management practices. We need to prevent desertification so we continue to have fertile soil to grow food for the world's population, and to prevent disasters like the Dust Bowl from recurring.

Depending on which units are completed, students can learn about a number of issues, including:

1. What desertification is
2. Where it occurs
3. Why it occurs
4. How it is linked to climate change
5. Influence of humans on desertification
6. Interactions with the natural environment (water resources, plants, animals, and biodiversity)
7. The environmental and socioeconomic consequences of desertification.
8. How to raise awareness and get people involved in combating the problem

Combating Desertification—Saving our Topsoil

Learning Objectives/Outcomes

Students who complete any of the units will gain understanding of the problem of desertification. The more units completed, the more the students will learn.

Materials (per student, group etc.)

Computer with internet connection, additional materials such as poster board, pictures, writing materials, are listed on the UNESCO site.

Materials for Additional Activity

module 17: Three aluminum foil baking pans, three kitchen garbage bags, dry top soil, blow dryer, moist grass clippings or other vegetation source, 3 pieces of 4" x 6" x 3" cardboard.

Ages of Audience

Middle School (Grades 5-8)

Recommended group size?

Limited only based on available computers/internet connection.

Where could you offer this?

Anywhere with internet computer access.

What type of room do you need?

1. Computer lab with internet connectivity
2. Additional activity: lab tables with room for classroom observation

Type of Lesson

1. Indoor
2. Experiment (follow procedure, get results, interpret results)

Time Needed

1. Teacher— Up to two hours reviewing the UNESCO activities and gathering required materials.
2. Participant/class time— There are 20 units that an instructor may choose to take their students through. Time is variable.

Methods/Procedures

The United Nations Educational, Scientific and Cultural Organization (UNESCO) has prepared teacher materials about desertification. We recommend the free "Learning to combat desertification" module found here:

http://www.unesco.org/mab/doc/ekocd/index_learning.html

Discussion Questions

Questions are already supplied as part of the online package. Resources are also supplied for teachers.

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Example Additional Activity

Module 17, Re-establishing a Favorable Environment

Place the aluminum pans next to each other with about 12 inches between pans, and put equal amounts of dry top soil in each container. Place the pans up against a wall, and tape garbage bags to the end of the pans to collect any mess that may occur. Pan 1 will have just plain dry topsoil. On Pan 2, place the moist grass or vegetation evenly to cover the topsoil (this simulates a cover crop, or leaving plant residue after harvesting). On Pan 3, place the cardboard pieces about 3 inches apart, parallel to the wall surface (this simulates wind breaks).

Use a blow dryer, set at cool, low speed, to simulate wind conditions. Aim the blow dryer over Pan 1, and let the students observe what happens to the dry top soil (it should blow into the garbage bag). Next, aim the blow dryer over Pan 2, and then Pan 3. Both of the pans should show significantly less wind damage.

Have students discuss the results and brainstorm ways they may be able to reduce wind damage further.