



## NOTES

### Food for America - Demonstration Plan

**Unit:** Environment

**Demonstration:** Erosion Control Model (20-30 minutes)

#### Objective(s):

1. Students will be able to identify the two main types of erosion: wind and water.
2. Students will be able to vocalize that farmers prevent erosion by planting crops.

#### Materials, Supplies, Equipment, References, and Other Resources:

- Sheet of plywood
- 4 basins or buckets
- Poster board
- Soil
- Fan
- Water and watering can
- Miniature figures (houses, people, animals, etc. if desired)
- Sod or small plants

\*\*\*NOTES – This project has a lot of room for creativity and adaptation. Have fun trying new designs and making the model as real as possible for your area. Houses and miniature people can make the model real to students. Just make sure people and homes are secured so as not to wash away with the soil!

It is also a good idea to test the model before using it in the school. Soil may react differently based on your model design, resources and area.

#### Introduction:

**Connection to students** – Who has ever played in the dirt before? What is dirt or soil good for besides playing in? (Growing crops, trees, grass, etc.). You bet! We need soil to grow the food that we eat, the fiber for the clothes that we wear, and the trees for the homes we live in. We see soil every day but how often do we actually think about its importance? Soil carries nutrients, or food, for plants to grow. Soil keeps plants in the ground and provides a foundation for us to build upon.

**Motivation** – There is a problem, however, that is putting our soil in danger. Our precious soil can be easily carried away by wind or rain. Who knows what this process is called? (erosion) In order to solve this problem, we must take a look at some of the causes of erosion and some ways to prevent it. Agriculturists, or farmers, around the country are helping prevent soil erosion, and you can too!

**Overview** – Today we're going to look at some models that show two main types of soil erosion and at how farmers work to prevent soil erosion.

#### Steps and Procedures for Performing the Skill/Task:

| STEPS (What to Do)  | Procedures (How to Perform the Step)                                                                  |
|---------------------|-------------------------------------------------------------------------------------------------------|
| <b>Model Set-up</b> | Make models prior to lesson. Keep in mind that this is a basic model and can be adapted in many ways. |
| • Base              | Use a sheet of plywood or other sturdy surface.                                                       |



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| Steps and Procedures for Performing the Skill/Task:                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| STEPS (What to Do)                                                    | Procedures (How to Perform the Step)                                                                                                                                                                                                                                                                                                                                                                                                               |
| <ul style="list-style-type: none"> <li>Wind-Erosion Model</li> </ul>  | Using half of the base, create two sections for the wind erosion model. Use soil to make a thick (>1") land mass on the board. The first section should contain only soil, which should be left to dry. The second section should include plants. An equal sized piece of sod can be used, or plant small plants in the soil to simulate farmed land. (See diagram)                                                                                |
| <ul style="list-style-type: none"> <li>Water-Erosion Model</li> </ul> | On the other half of the plywood, create two sections for the water erosion model. Build a small hill or slope on each section out of soil. A bowl may be placed upside down under the soil to aid in creation. As in the wind-erosion model, plant small plants on the second section to simulate farmed land.                                                                                                                                    |
| <ul style="list-style-type: none"> <li>Assembly</li> </ul>            | Use small model houses, people, animals, etc. to make the model look like a real farm. Set the plywood on plastic rectangular basins or buckets to catch run-off water and soil. Set up a poster board back to the model to catch wind-blown soil, and allow it to drop into the buckets.                                                                                                                                                          |
| <ul style="list-style-type: none"> <li>Diagram</li> </ul>             | <p>A – Wind erosion: bare soil<br/>B – Wind erosion: planted soil</p> <p>C – Water erosion: bare soil<br/>D – Water erosion: planted soil</p>                                                                                                                                                                                                                                                                                                      |
| <b>Class Demonstration</b>                                            | Have students gather around the model.                                                                                                                                                                                                                                                                                                                                                                                                             |
| <ul style="list-style-type: none"> <li>Wind erosion</li> </ul>        | Let's look at the first two plots (A and B). What do you notice about these plots? (B is covered with grass/plants.) Let's see what happens when a big gust of wind comes. Use fan to blow soil from plot A against poster board. Analyze how much soil was collected in basin. Do the same for plot B. Discuss with class why there was a difference. (Plants secure the soil and hold it in place when the wind blows, decreasing wind erosion.) |



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### Steps and Procedures for Performing the Skill/Task:

| STEPS (What to Do)                                              | Procedures (How to Perform the Step)                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Water erosion</li> </ul> | <p>Now let's look at these two plots (C and D). What do you notice about these plots? (D is covered with plants/grass.) Based on what you saw a minute ago, what do you expect to happen when the rain comes? (C will lose more dirt.) Use watering can to drench plot C. Analyze soil collected. Do the same with plot D. Discuss with class why there was a difference.</p> |

### Plans for Learners/Participants to Practice the Skill/Task:

- Demonstrate model as described above.
- If time allows, invite students to control the wind and water for a second try.

### \*\*Adaptations for Upper Elementary

- Explore the two main types of erosion control: perimeter control and stabilization. Perimeter control includes sediment basins and traps such as straw bales and silt fences. These are used to catch sediment so that it can be reintegrated into the soil. Stabilization is erosion prevention by planting ground cover, using specialized fabric or netting over the soil, or planting crops to stabilize soil.
- Check out the Storm Water Coalition web page [www.stormwatercoalition.org](http://www.stormwatercoalition.org) for more information. Click on the educator's button, and you will be able to access lesson plans on water and erosion.

### Summary of Key Points:

**Conclusion** – Who can tell us what happened when wind blew on the two plots? What happened when the rain came? Which plot lost the most soil? (the one that was bare) Which one lost the least soil? (the one with plants) What is it called when soil is lost to wind or water? (erosion) How do farmers prevent erosion? (planting crops)

Today when you go to recess, or when you are on your way home, look around for places where wind and water have caused erosion. Then look for places where people have put plants to prevent erosion. You might find a place at your home where you can prevent erosion.