

OJT Training Module Cover Sheet

Title: How to...Understand the Processes of Soil Erosion

Type: Skill Knowledge

Performance Objective: Trainee will be able to... understand the processes that are involved in soil erosion.

Target Proficiency:

- Awareness Understanding Perform w/ Supervision
 Apply Independently Proficiency, can teach others

Trainer Preparation:

Be familiar with the following suggested reference material.

Chapter 3 of the Soil Survey Manual

<http://soils.usda.gov/technical/manual/contents/chapter3b.html>

Soil Quality Information Sheet “Soil Quality Resource Concerns – Soil Erosion”

http://soils.usda.gov/sqi/publications/files/sq_two_1.pdf

“Global Dimensions of Vulnerability to Wind and Water Erosion” by Paul Reich, Hari Eswaran, and Fred Beinroth

(<http://soils.usda.gov/use/worldsoils/landdeg/papers/ersnpaper.html>)

Understanding Soil Risks and Hazards, pp 36-46 <http://soils.usda.gov/use/risks.html>

“Soil Erosion by Water”, 1987, USDA SCS Agriculture Information Bulletin 513

“Soil Erosion by Wind”, 1989, USDA SCS Agriculture Information Bulletin 555

Prepare optional demonstration project, such as

http://soils.usda.gov/education/resources/k_12/lessons/experiments/erosion/

Special Requirements:

Prerequisite Modules:

None

Notes:

Field reference sites would be beneficial to demonstrate the result of the processes.

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OJT Module Lesson

Title: How to Understand the Processes of Soil Erosion	
WHAT	WHY, WHEN, WHERE, HOW, SAFETY, QUALITY
Review the objectives.	To learn and understand the physical and cultural processes of soil erosion caused by the forces of wind and water
Review reference material.	Trainee should read and study reference material before meeting with the Trainer.
Discuss the material.	<p>Discuss the overall processes of soil erosion. Define the difference between geologic erosion and accelerated erosion.</p> <p><u>Geologic Erosion</u> Discuss mass-wasting and gravitational forces involved in geologic erosion.</p> <p><u>Accelerated Erosion</u> Erosion by Water Discuss processes of detachment, transport, and deposition. Discuss sheet, rill, gully, and ephemeral erosion.</p> <p>Erosion by Wind Discuss saltation, creep, and suspension. Discuss cultural practices that affect accelerated erosion. Conduct a soil erosion demonstration / experiment (optional).</p> <p><u>Field Trip</u> Conduct a field trip of the local area to see the results of the different processes of soil erosion.</p>
Evaluate the understanding of the trainee.	Trainee should be able to define the processes of accelerated erosion and to demonstrate their knowledge by showing local examples in the field.

Measurement of Learning Quiz

1. Geologic erosion is a form of natural erosion.
 - a. True
 - b. False
2. Accelerated erosion is largely a product of human activity.
 - a. True
 - b. False
3. The thickness of an "A" horizon (topsoil) can be used as a standard in all cases for how much soil has been added or lost on a particular soil.
 - a. Yes
 - b. No
4. Match the following indicators of erosion that you could use to estimate soil surface stability or loss.

1. Visual
2. Physical
3. Chemical
4. Biological

- a. Decreased microbial biomass _____
- b. Measurement of aggregate stability _____
- c. Decreases in soil organic carbon content _____
- d. Changes in cation-exchange capacity (CEC) _____
- e. Changes in soil horizon thickness _____
- f. Deposition of soil at field boundaries _____
- g. Increasing depth of channels and gullies _____
- h. Presence of moss and algae crusts in arid soils _____
- i. Comparison of aerial photographs taken over time _____
- j. Increase in calcium carbonate at surface (if it exists in subsurface layers) _____
- k. Lower rate of respiration _____
- l. Slower decomposition of plant residues _____

5. Match the following signs of erosion with the kind of erosion it is associated with.

1. Wind erosion
2. Water erosion

- a. Small rills and channels on soil surface _____
- b. Soil accumulation along fence lines or snow banks _____
- c. Dust clouds _____
- d. Pedestals of soil supporting pebbles and plant material _____
- e. A drifted appearance of the soil surface _____
- f. Soil deposited at the base of slopes _____
- g. Sediments in lakes and streams _____

Measurement of Learning

Open attachment: Understanding Soil Erosion Quiz-answers.pdf

Performance Report

Open attachment: Trainee Performance Report Form template.pdf