

Avoiding Soil Loss

Dana Desonie, Ph.D.

Say Thanks to the Authors

Click <http://www.ck12.org/saythanks>

(No sign in required)

To access a customizable version of this book, as well as other interactive content, visit www.ck12.org

CK-12 Foundation is a non-profit organization with a mission to reduce the cost of textbook materials for the K-12 market both in the U.S. and worldwide. Using an open-content, web-based collaborative model termed the **FlexBook®**, CK-12 intends to pioneer the generation and distribution of high-quality educational content that will serve both as core text as well as provide an adaptive environment for learning, powered through the **FlexBook Platform®**.

Copyright © 2014 CK-12 Foundation, www.ck12.org

The names “CK-12” and “CK12” and associated logos and the terms “**FlexBook®**” and “**FlexBook Platform®**” (collectively “CK-12 Marks”) are trademarks and service marks of CK-12 Foundation and are protected by federal, state, and international laws.

Any form of reproduction of this book in any format or medium, in whole or in sections must include the referral attribution link <http://www.ck12.org/saythanks> (placed in a visible location) in addition to the following terms.

Except as otherwise noted, all CK-12 Content (including CK-12 Curriculum Material) is made available to Users in accordance with the Creative Commons Attribution-Non-Commercial 3.0 Unported (CC BY-NC 3.0) License (<http://creativecommons.org/licenses/by-nc/3.0/>), as amended and updated by Creative Commons from time to time (the “CC License”), which is incorporated herein by this reference.

Complete terms can be found at <http://www.ck12.org/terms>.

Printed: July 10, 2014

flexbook
next generation textbooks



AUTHOR

Dana Desonie, Ph.D.

CHAPTER

1

Avoiding Soil Loss

- Describe steps that can be taken to minimize soil loss.



Why did someone cut designs into this hillside?

Although the hillside is interesting, that's not why this was done. Terracing prevents soil erosion on a hillside that is being farmed. Many techniques can be utilized to reduce soil erosion.

Preventing Soil Erosion

Soil is a renewable resource, but it can take thousands of years to form. That's why people need to do what they can to prevent soil erosion.

Farming Methods that Reduce Soil Erosion

The Dust Bowl taught people that soil could be lost by plowing and growing crops. New ways of farming were developed to protect the soil. Some of the methods are described below (**Figure 1.1**).

Other Ways to Reduce Soil Erosion

There are several other ways to help prevent soil loss. Some of them are pictured below (**Figure 1.2**).

- Prevent overgrazing. Frequently move animals from field to field. This gives the grass a chance to recover.
- Avoid logging steep hillsides. Cut only a few trees in any given place. Plant new trees to replace those that are cut down.

Farming Methods that Reduce Soil Loss



Strip Cropping

Groundcover plants such as grasses are planted in strips between fields of crops. The strips of groundcover soak up rain and slow runoff.



Terracing

Step-like terraces are built on slopes. They prevent runoff from rushing downhill and carrying away the soil.



No Till Planting

Seeds are planted in the ground without first tilling (plowing) the soil. Dead plants from the previous crop remain on the ground. Their roots hold the soil in place.



Windbreaks

Rows of trees are planted between fields. The trees slow down the wind and reduce wind erosion.



Contour Cropping

Crops are planted in curving rows to follow the contour of hills. This slows runoff and reduces erosion.



Cover Crops

Fields are planted year-round, even in seasons when crops don't grow. The plants cover the soil and hold it in place.

FIGURE 1.1

There are many farming methods that help prevent soil erosion.

- Reclaim mine lands. Save the stripped topsoil and return it to the land. Once the soil is in place, plant trees and other plants to protect the bare soil.
- Use barriers to prevent runoff and soil erosion at construction sites. Plant grass to hold the soil in place.
- Develop paving materials that absorb water and reduce runoff.
- Restrict the use of off-road vehicles, especially in hilly areas.

Vocabulary

- **contour cropping:** Plowing along contour lines to slow soil erosion.

Protecting the Soil



Replant forests.



Reclaim mine land.



Hold soil in place at construction sites.



FIGURE 1.2

Taking steps to control erosion can help save soil.

- **cover crops:** Crops are planted year-round to increase fertility and prevent erosion.
- **no-till planting:** Crop residues are left on the soil and soil is disturbed less.
- **strip cropping:** Strips of closely sown crops alternate with strips of row crops.
- **terracing:** Farming that takes place on a series of platforms down a hill.

Summary

- Soil is a renewable resource. Sometimes it is lost faster than it can be replaced.
- Farming methods that can reduce soil erosion include terracing, contour cropping, windbreaks, and no-till planting.
- Caution with grazing, recreational activities and reclaiming used lands can help reduce soil erosion.

Practice

Use the resource below to answer the questions that follow.

- **Protecting Against Soil Erosion** at <http://www.hippocampus.org/Earth%20Science> → Environmental Science → Search: **Erosion Control**

1. Describe contour farming.
2. What is terracing?
3. How does strip cropping work?
4. What is agroforestry?
5. How does tree litter help crops?

Review

1. Why is it so important to reduce soil erosion?
2. What are some of the agricultural practices that can reduce soil erosion?
3. How can soil erosion be reduced where trees are logged?
4. Why should a forest be replaced if it is logged?

References

1. Strip Cropping: Image copyright Studio 37, 2013; Terracing: Image copyright beboy, 2013; No Till Planting: Courtesy of Jason Johnson, USDA NRCS Iowa; Windbreaks (top): Image copyright Cloudia Spinner, 2013; Windbreaks (bottom): Image copyright Loskutnikov, 2013; Contour Cropping: Image copyright Earl D. Walker, 2013; Cover Crops: Courtesy of USDA Natural Resources Conservation Service. Farming methods that help prevent soil erosion. No Till Planting: CC-BY 2.0; Cover Crops: Public Domain; Remaining images: Used under licenses from Shutterstock.com
2. Replanting: Image copyright 4780322454, 2013; Reclamation: Image copyright A.S. Zain, 2013; Soil Mitigation (left): Image copyright Gary Whitton, 2013; Soil Mitigation (right): Image copyright Mark Winfrey, 2013. Ways to help protect the soil. Used under licenses from Shutterstock.com