



# Introduction to the Advantages of Vegetation

Kabul, 2006



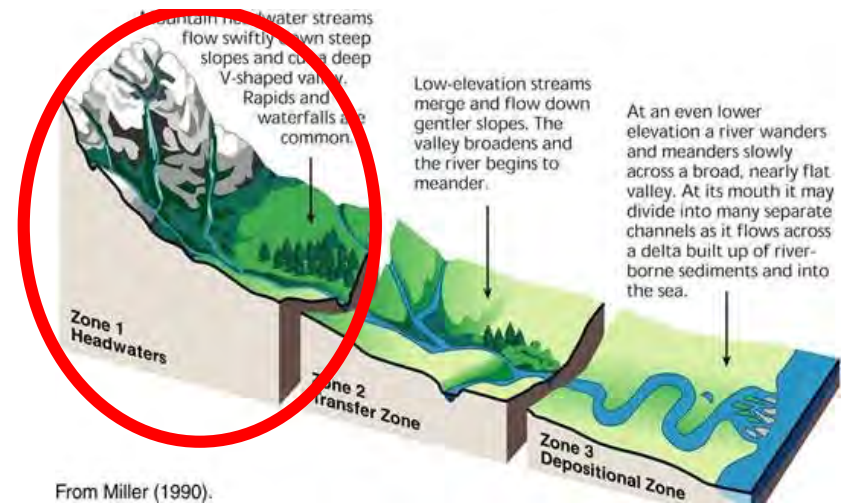
This training was prepared by the U.S. Department of Agriculture (USDA) team of Sarah Librea-USDA Foreign Agricultural Service (Development Resources Specialist), Jon Fripp (Civil Engineer), Chris Hoag (Wetland Plant Ecologist), and Dan Robinett (Rangeland Management Specialist) -USDA Natural Resources Conservation Service. Fripp, Hoag, Robinett were the primary authors of this material. The U.S. AID provided funding support for the USDA team.

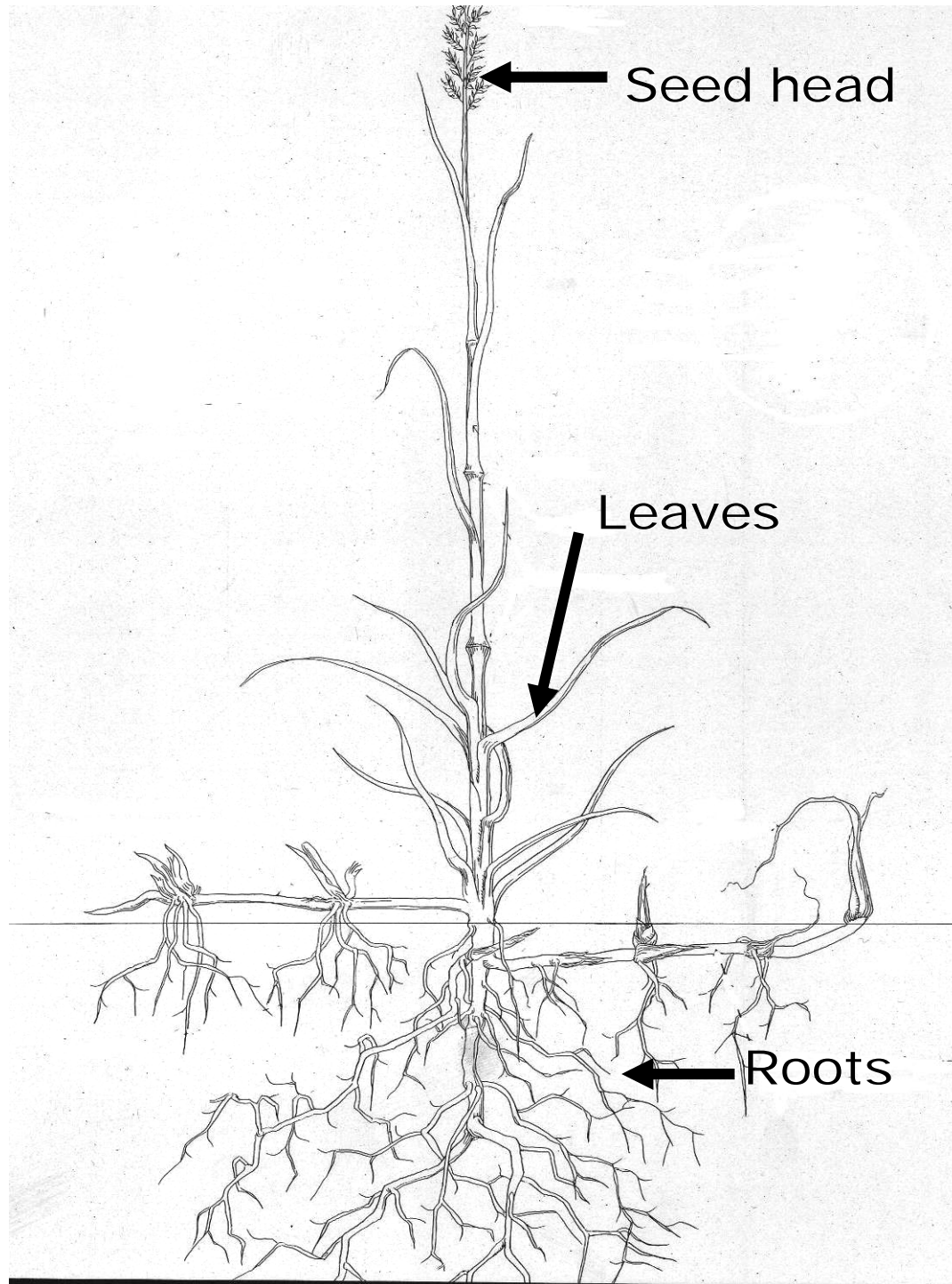


# Vegetation is very important in all the watershed zones.

## COLLECTION ZONE

- Vegetation reduces hillside erosion
- Reduces topsoil loss
- Traps snow melt on the slope
- Allows the water to sink into the ground instead of running off
- Recharges ground water



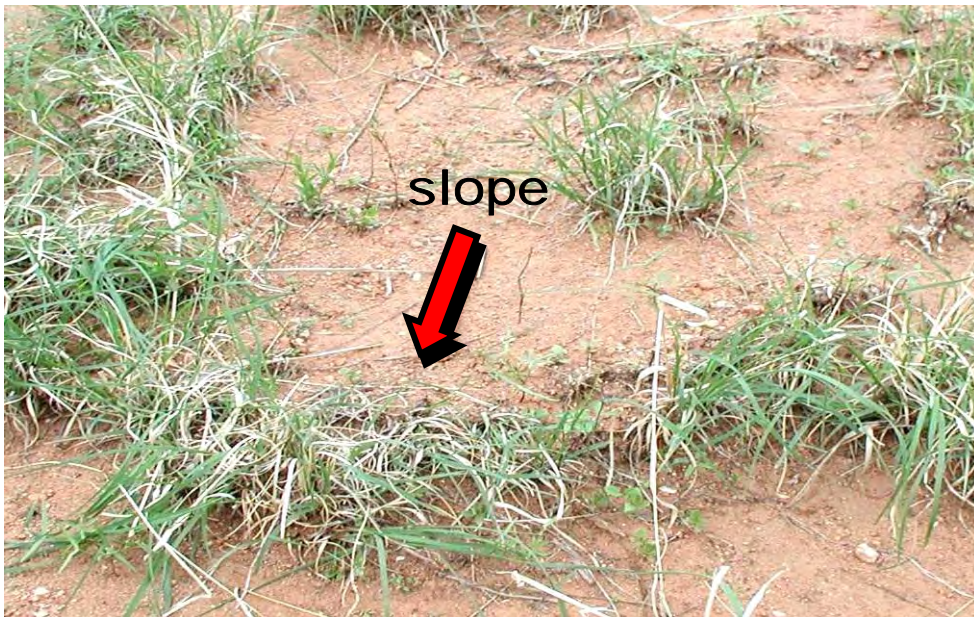
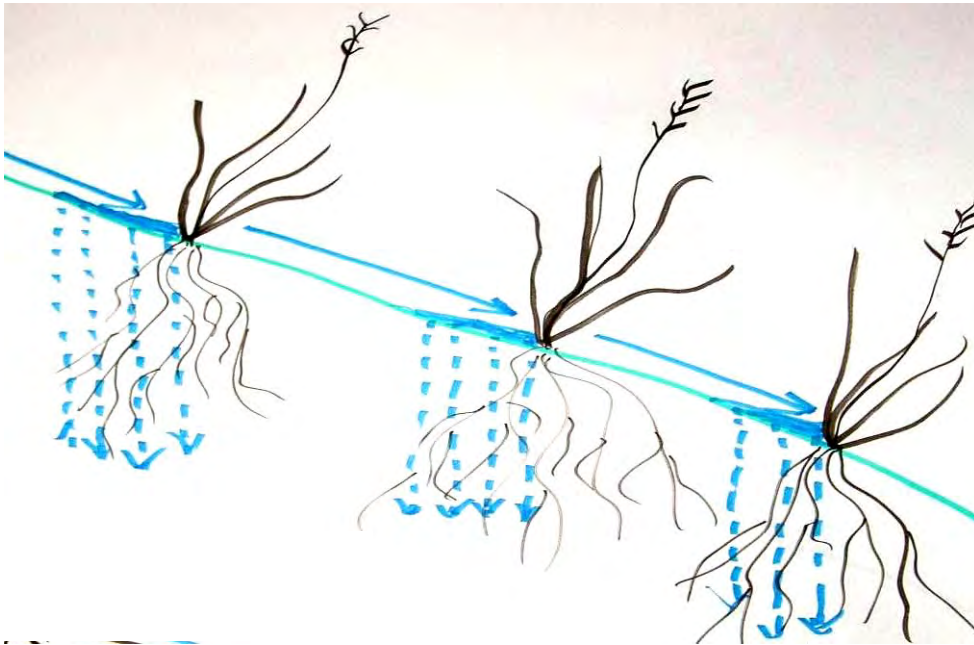


## Hillside vegetation

- Seed head produces seed to help the plant spread
- Leaves and Stems
  - protect the soil surface by reducing erosion
  - increase water percolation
- Roots
  - hold the soil in place
  - decrease weed invasion

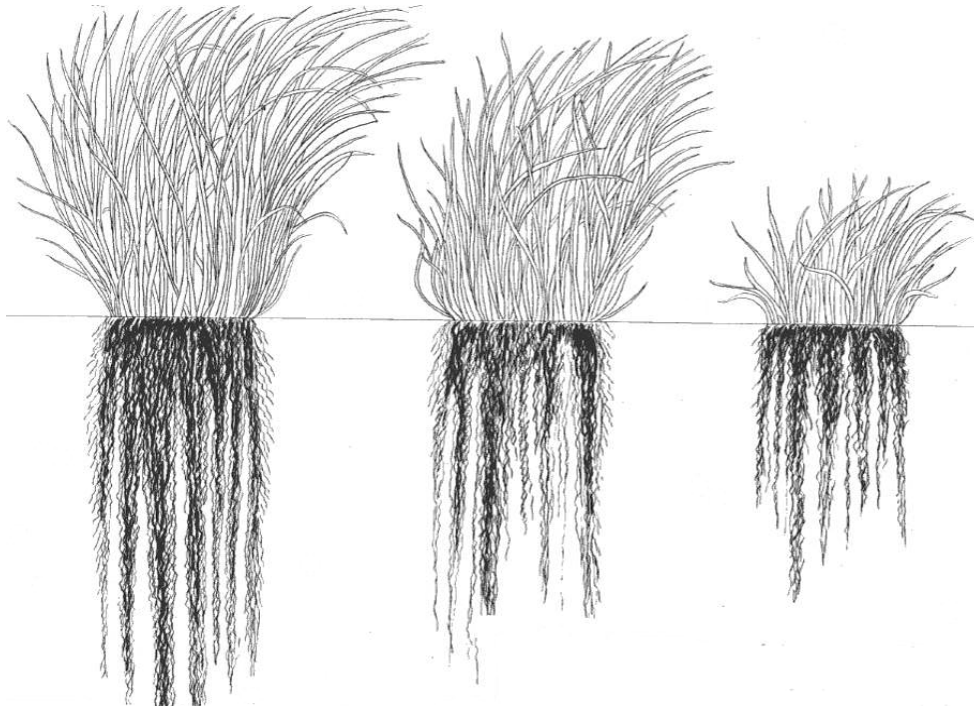
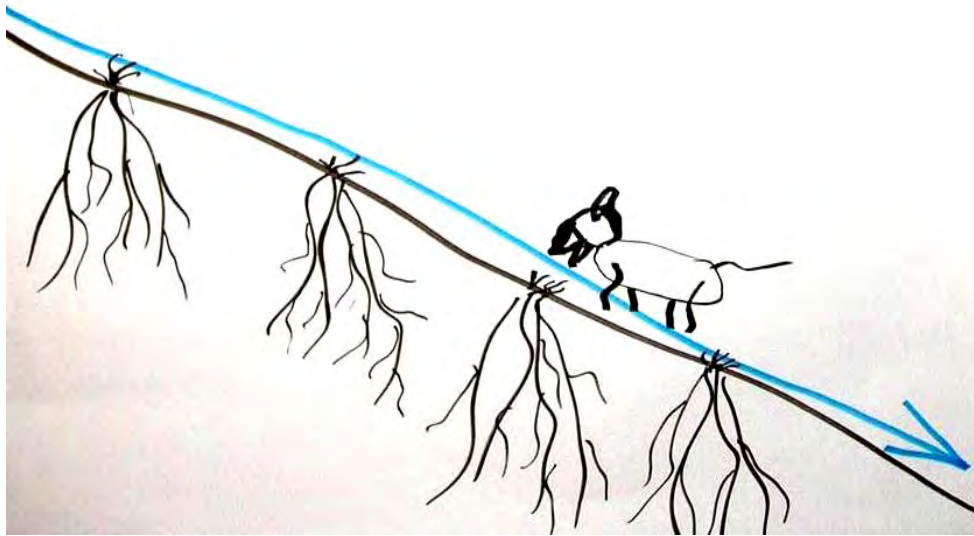


# Advantages of Vegetation



- When snow melt occurs, water will run down the slope
- As the water runs down the slope, it picks up top soil
- Water and sediment will pool behind the vegetation allowing water to seep into the ground and recharge the ground water
- Less soil surface erosion with more vegetation

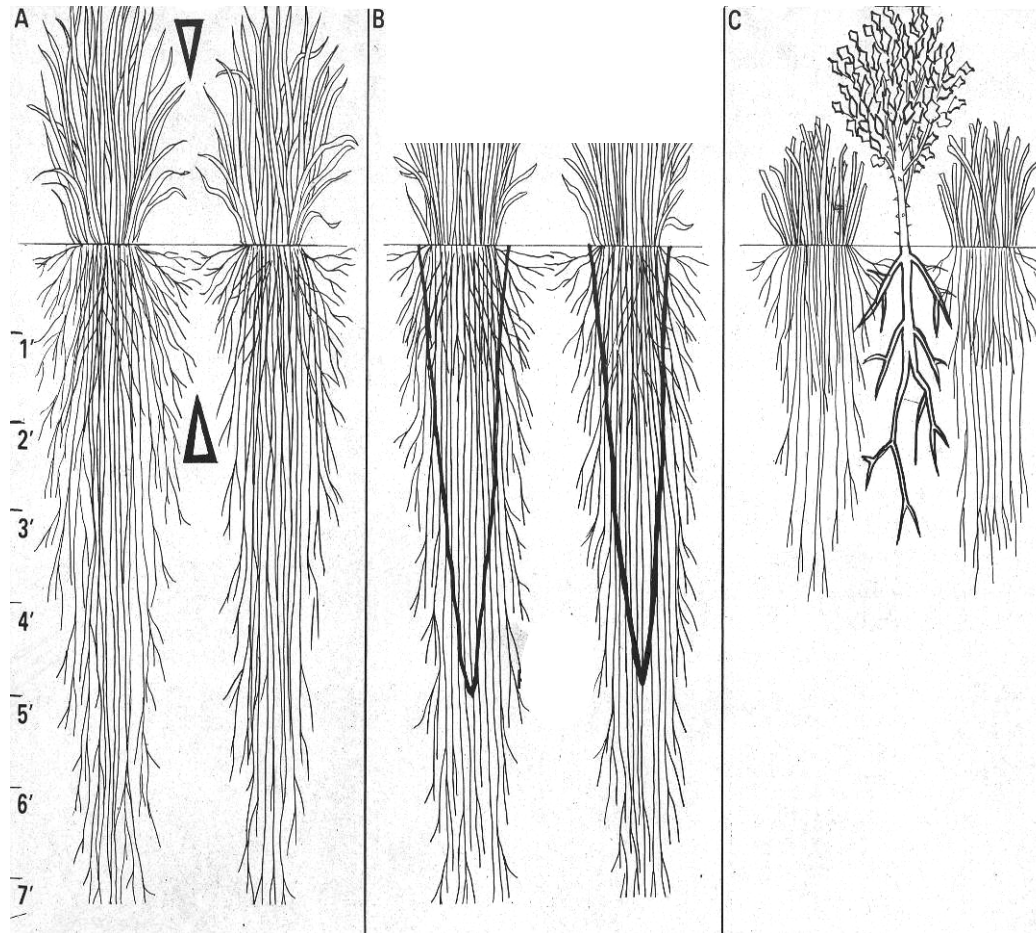
# Advantages of Vegetation



- If a majority of stems and leaves are continuously removed:
  - Plants are weaker
  - Fewer roots to hold the soil
  - Water and eroded soils will run off the slope and less water will percolate into the soil
  - Top soil will be eroded away and grass production will drop



# Advantages of Vegetation



# Advantages of Vegetation



- How to keep the vegetation on the slope?



- Control grazing
- Train the herders to understand not to allow the sheep and goats to take all of the grass and other vegetation
- Take only 50 % of the plants each year
- Rotate time of use in each pasture, each year (early grazing should only happen once every 3 – 4 years)



# Advantages of Vegetation



## What can be done?

- Manage the grass that is already on the hillside
- Plant new grass
- Plant trees and shrubs
  - Hillside ditches to catch runoff and water the trees and shrubs
  - Compost and fertilizer for better growth
  - Mulch to hold water





**Test Time**  
*What is wrong here?*

No Trees and  
shrubs  
planted yet.



A photograph of a dry, hilly landscape. The foreground and middle ground consist of rolling hills with sparse, low-lying green and brown vegetation. The hills appear to be eroded, with visible horizontal layers of soil. In the background, there are more hills and mountains, some with patches of snow or light-colored rock. A few small trees are scattered across the landscape, particularly on the right side. The sky is blue with some light clouds. The overall scene suggests a semi-arid or high-altitude environment where the vegetation has been significantly reduced.

**Test Time**

*What is wrong here?*

Grass on the  
hillside has  
been grazed  
more than 50%