

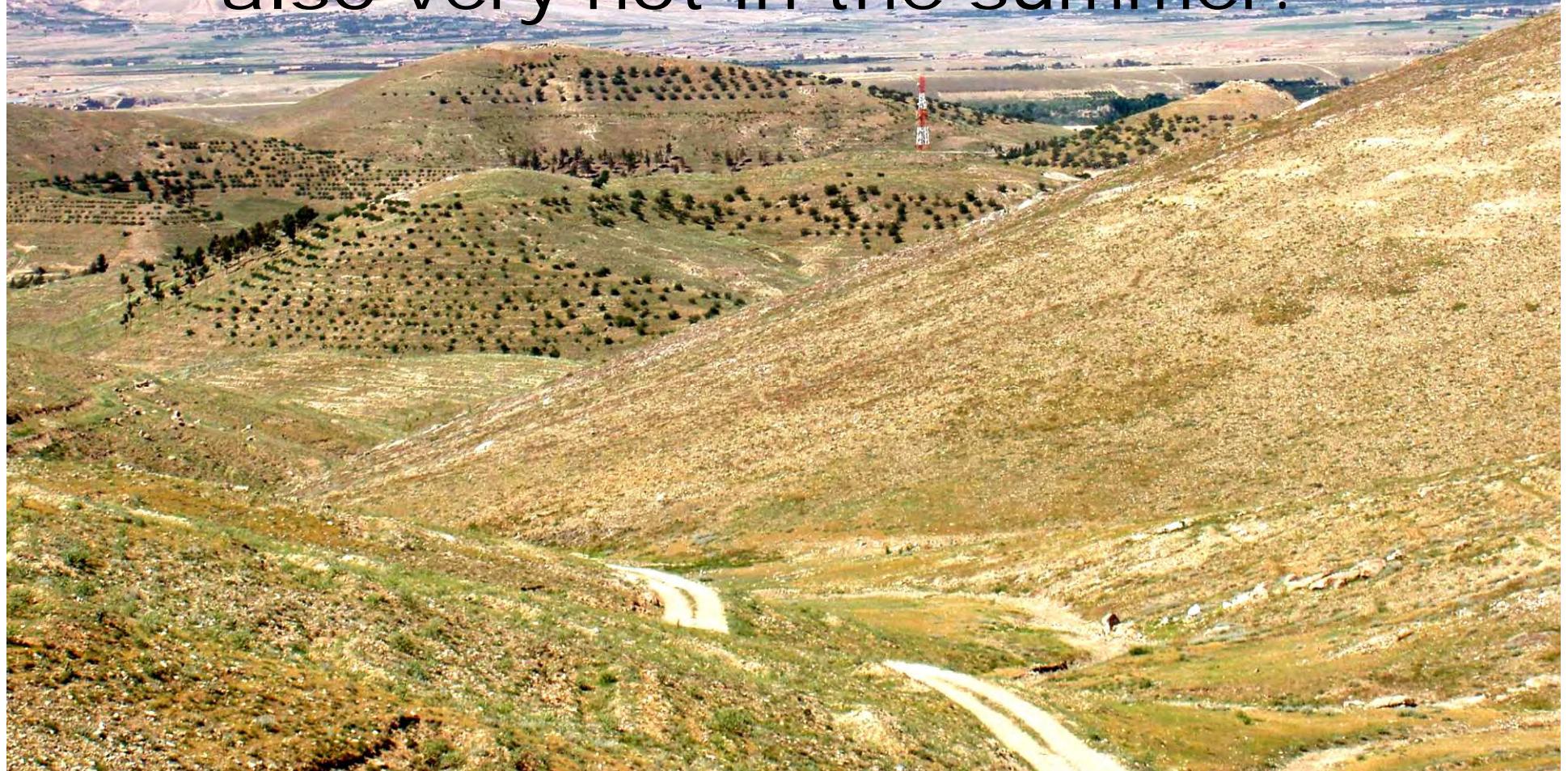
Introduction to Planting In Dry Areas

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.

In Afghanistan, around Kabul, the total annual precipitation is about 30 cm. This is very dry. The temperatures are also very hot in the summer.

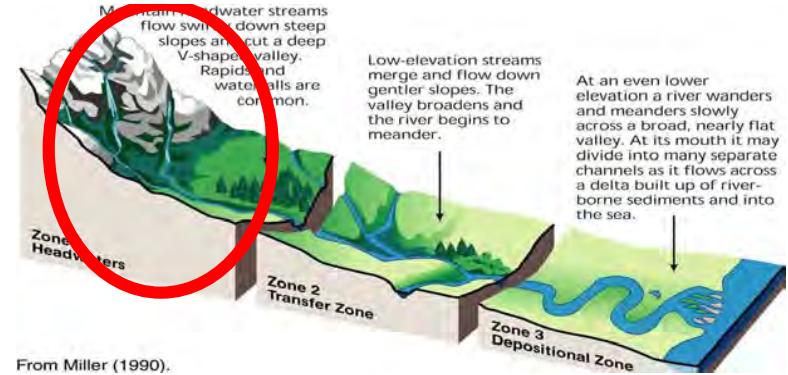




Water is very important to get
successful establishment of Trees,
Shrubs, Forbs, and Grasses

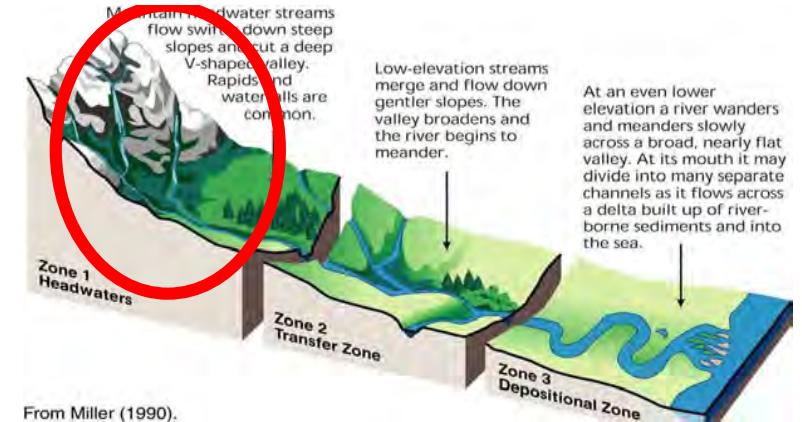
Plants in the Collection Zone

- Water comes in the form of snow and early spring rain
- The growing season are very dry
- Winters are cold and windy



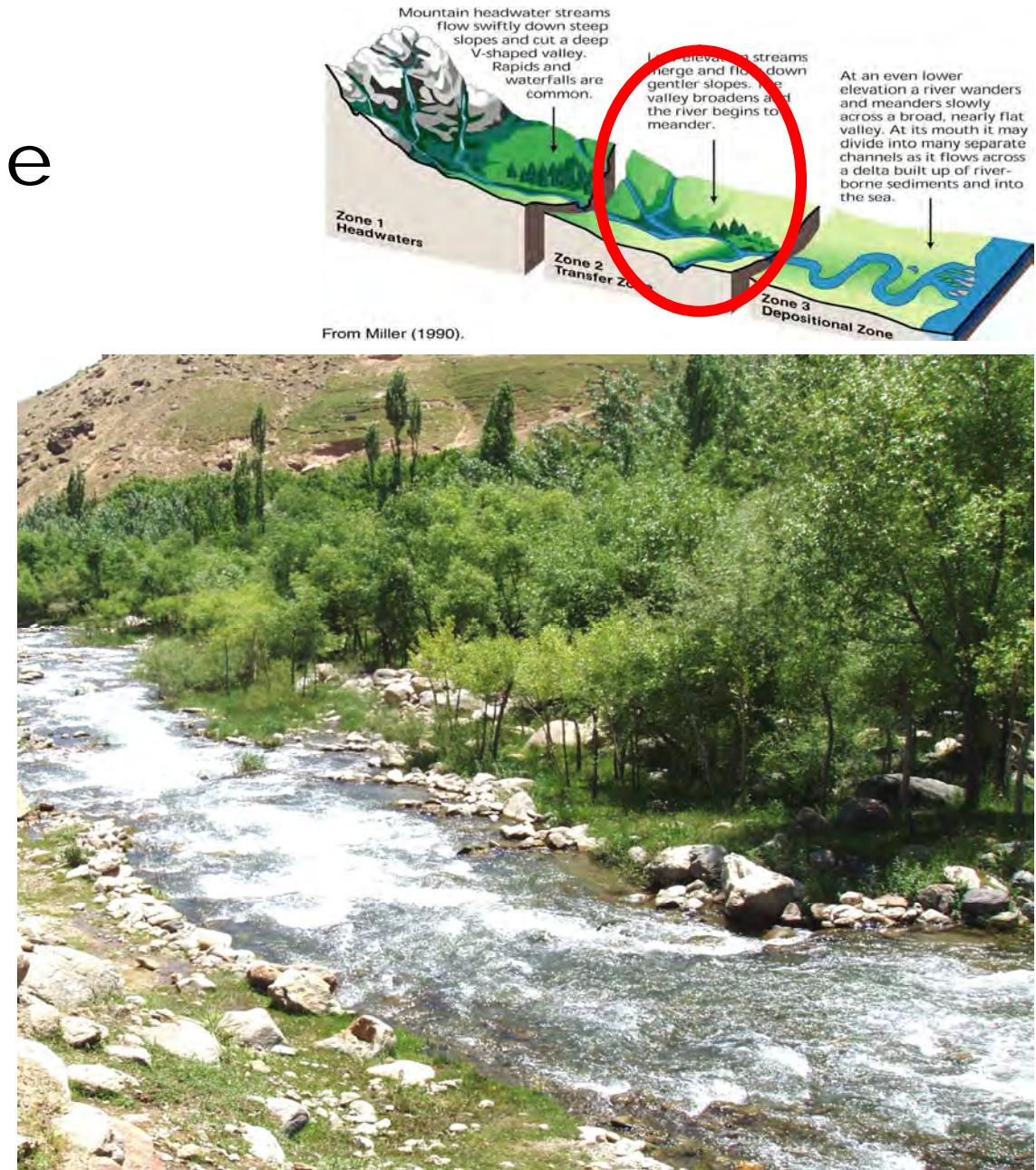
Planting Methods in the Collection Zone

- Plant grasses in the dormant season (late fall after it freezes)
- Plant adapted trees or shrubs in the site (soil, slope, and aspect)
- Plant trees and shrubs on hillside ditches to increase available water
- Plant trees and shrubs around check dams to prevent flanking



Plants in the Transport Zone

- Water is located along the streams and rivers
- Plants are dependent upon water in the saturation area
- Plants need to be wetland plants, river trees, shrubs, and grasses



Planting Areas Along a Stream or River

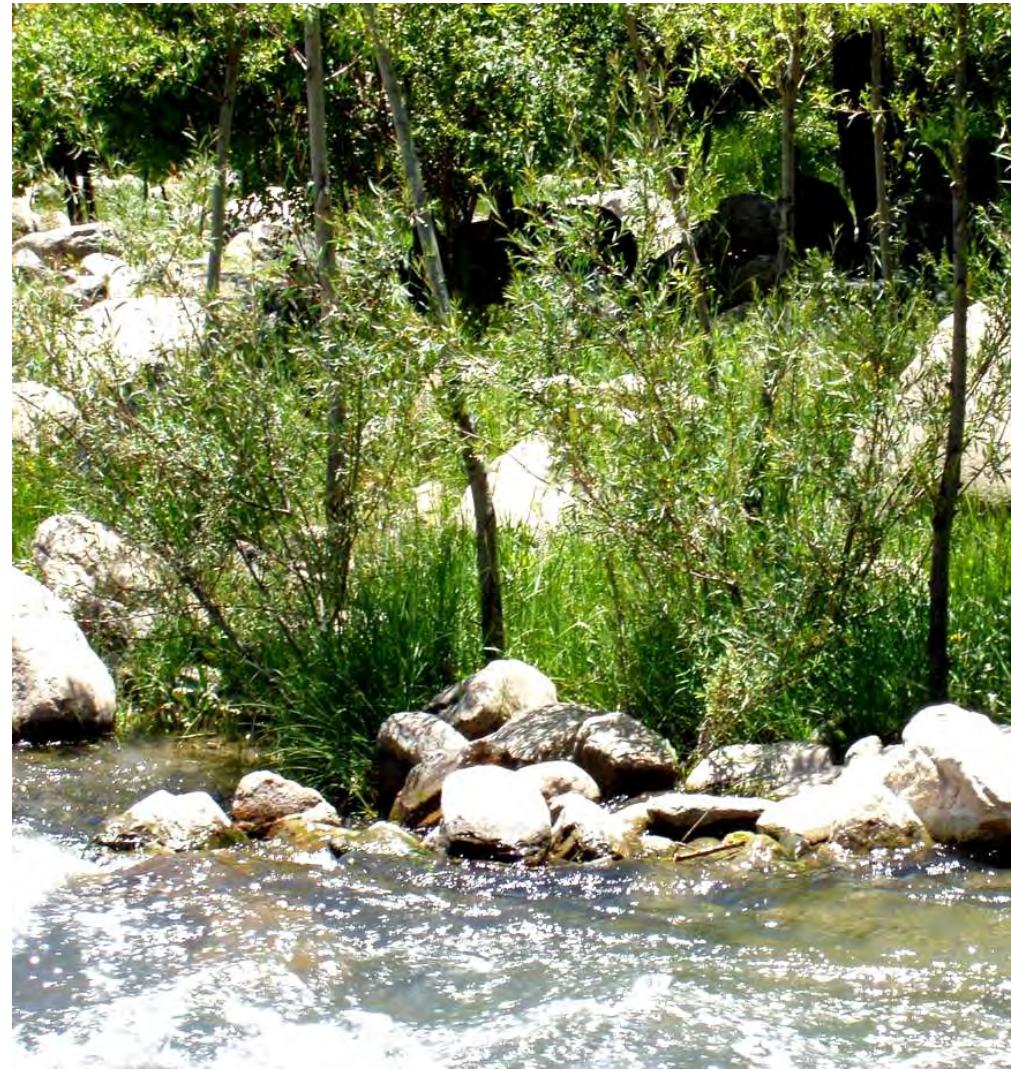
- Plant Grasses and Wetland plants in specific areas along the stream
 - Plant grasses and wetland plants near the water's edge
 - The strong root systems will help hold the banks together
 - They will grow in very wet conditions



Planting Areas Along a Stream or River



- Plant shrub species at specific areas along the stream
 - Shrubs with flexible stems that bend over when flood water hits them
 - Large root system that grows deep into the soil
 - Provides some shade for the water



Planting Areas Along a Stream or River

- Plant tree species at specific areas along the stream
 - Trees are planted back from the streambank
 - Large trunk is not flexible when hit with flood water
 - Very large and deep root systems
 - Provides shade on the water which helps keep it cool



Planting Areas Along a Stream or River

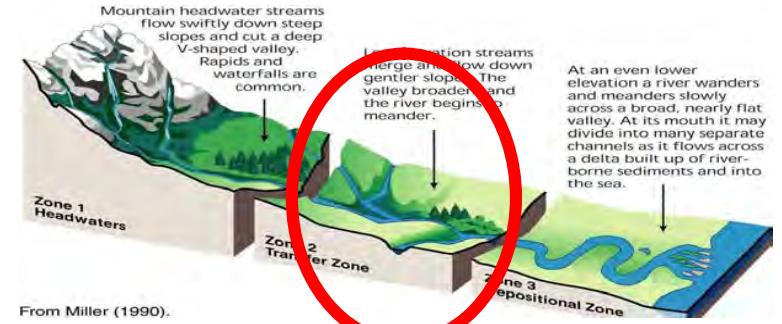


- Plant different species of containerized trees and shrubs at specific areas along the stream
 - Containerized trees and shrubs can be planted on the floodplain
 - Irrigation may be necessary
 - Use cuttings to reach the lowest watertable of the year (irrigation is not necessary)



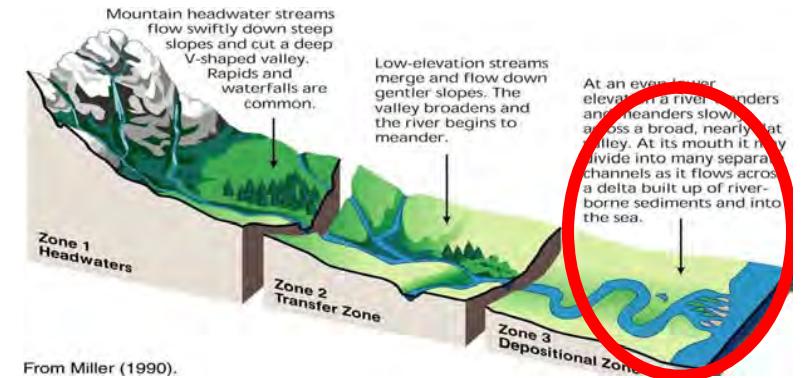
Planting Methods in the Transport Zone

- Plant cuttings with a bar to dig the planting hole
- Planting containerized plants - use a shovel
 - Hole should be 2X width of the rootball
 - Wet the hole before planting the rootball
 - Fill the hole around the rootball with wet mud to prevent air pockets



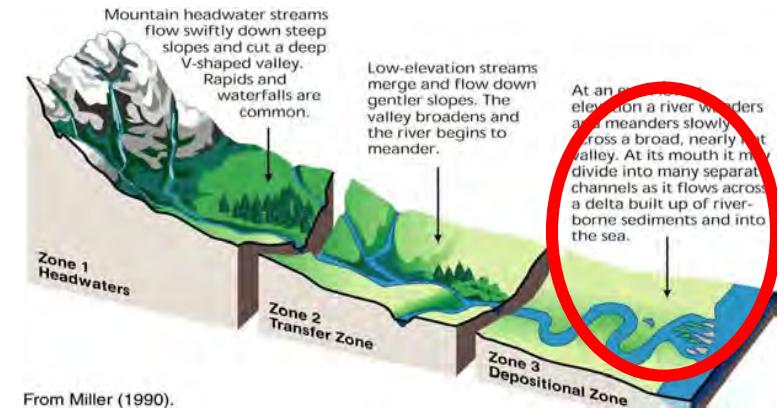
Plants in the Deposition Zone

- Soils in the deposition zone are very fertile,
 - This zone grows the best crops
 - This zone grows the best pasture
 - It also grows the best trees
 - Plant a cover crop to keep dust from blowing



Planting methods in the Deposition Zone

- Plant crops with normal cropping methods
- Plant grass species that produce large amounts of forage
- Wetlands are important and should be planted with the right plants at the right water level



- Trees, shrubs, forbs, grasses and wetland plants are very important in protecting the watershed.
- To keep them in the watershed - protect them with good management.
- If they die, replant carefully and provide lots of water.





Test Time
What is wrong here?

Water can wash out the ditch if it runs down the hillside with no control.

No trees,
shrubs, or
wetland plants
on this side



Test Time
What is wrong here?