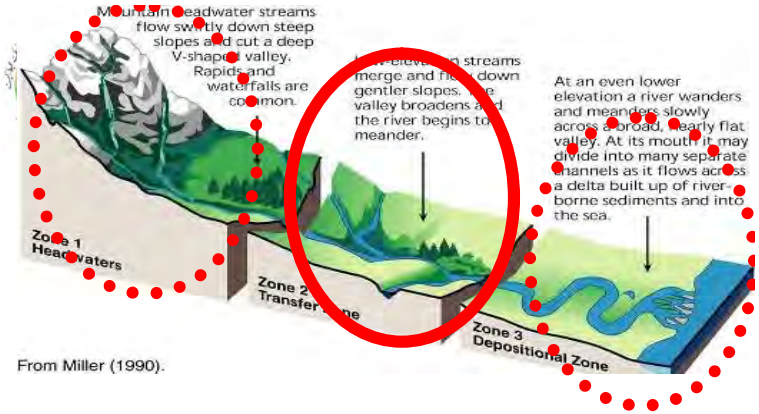
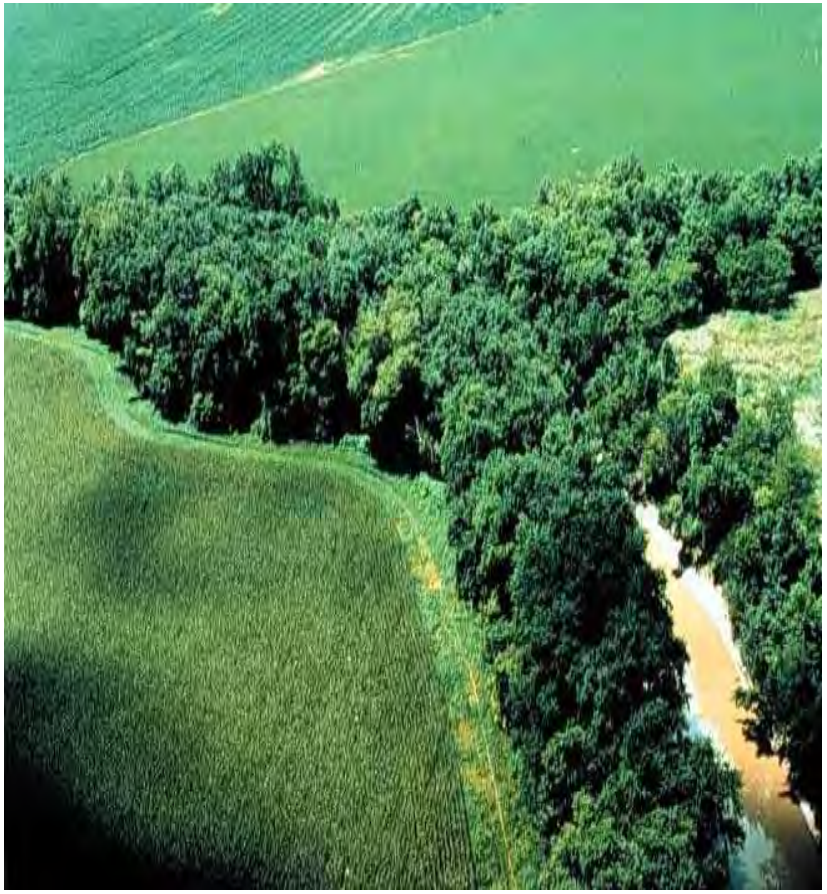
Introduction to Riparian Buffers

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.

Riparian Buffers

- Riparian zones are between the water and the uplands
- Riparian buffers act to protect the streams from pollution
- Buffers are important in the collection, transport, and deposition zones
  - **Especially important in the Transport Zone**





Riparian Buffers

- Riparian buffers function:
  - Clean up water that flows over the land into a stream by
    - Filtering
    - Promoting sediment deposition

Riparian Buffers

- Riparian buffers function:
  - To strengthen the streambanks and reduce erosion

Riparian Buffers

- Riparian buffers functions:
  - To slow flood waters and reduce the volume of water through root absorption.
  - To allow water storage in plant roots and to provide recharge of groundwater

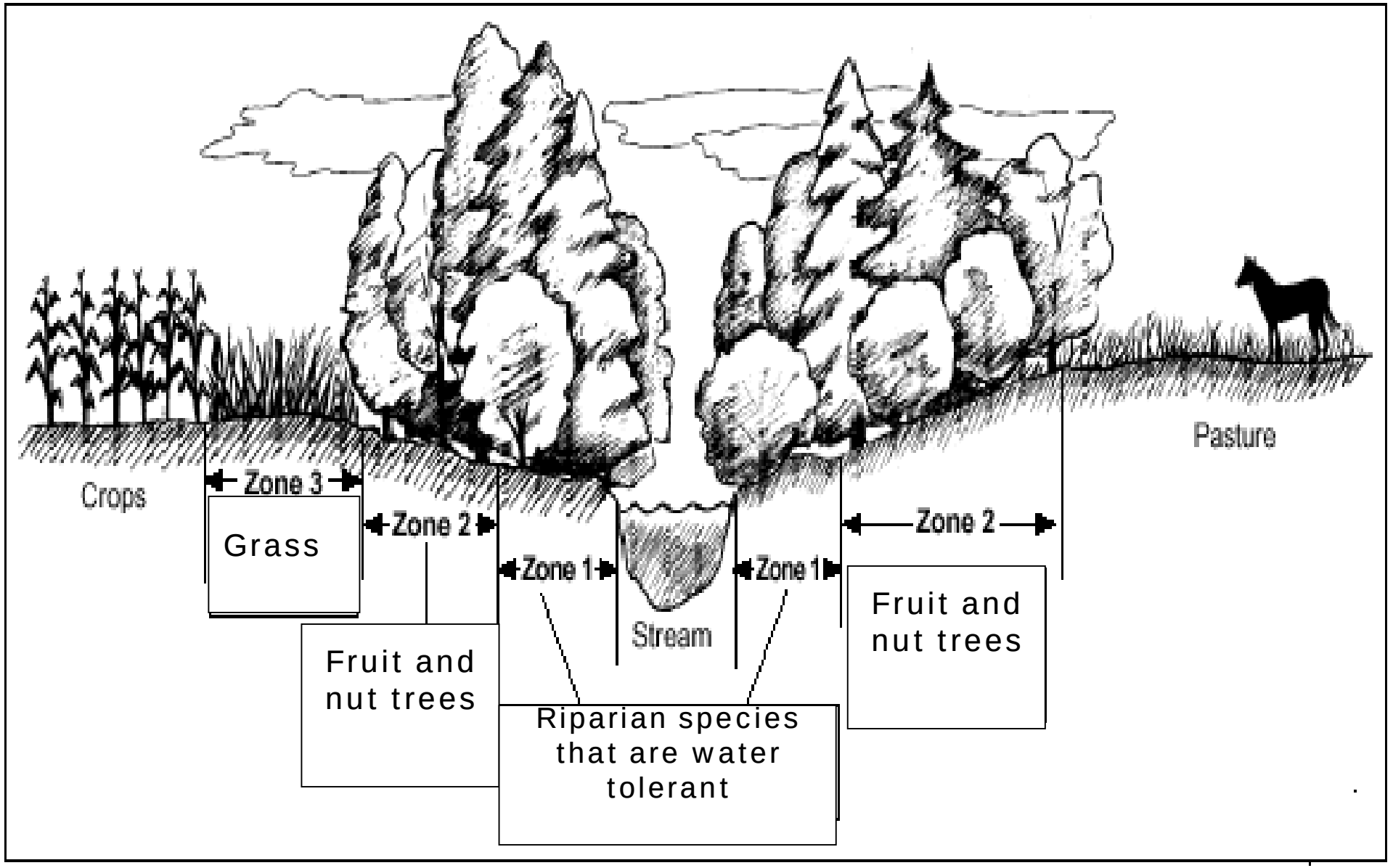
Riparian Buffers

- Riparian buffers provide shade and cover for the stream
  - Lowers water temperatures
  - The leaves of trees and shrubs improve air quality by filtering dust
- Riparian buffers can heal streambanks
- Riparian buffers reduce the possibility of major shifts in the stream or river

Riparian Buffers

- Riparian buffers produce:
  - Large quantities of grass
  - Large diameter trees
  - Many shrubs with lots of branches
  - They can be planted with fruit and nut trees
- Plants in the buffer are fertilized by the nutrients in the water as it flows through the buffer

Riparian Buffer Design



Riparian Buffer Design

- Grass and herbaceous plants:
  - spread surface runoff to catch sediment
  - improve infiltration and water storage

Riparian Buffer Design

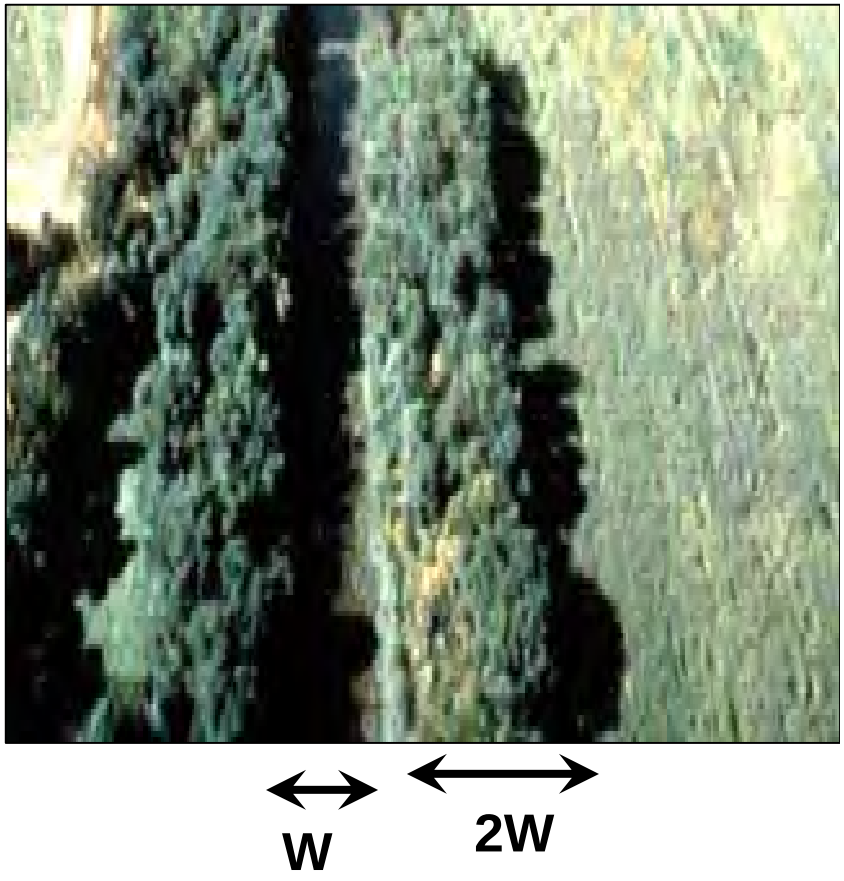
- Shrubs trap some nutrients and pollutants without shading crops.

Riparian Buffer Design

- Undisturbed shrubs and trees:
  - provide habitat
  - shade water
  - stabilize bank

Riparian Buffer Design

- The riparian buffer should be on both sides of the stream or river
- The width of the riparian buffer should be at least 2 times the width of the stream or river
- The minimum width of the riparian buffer should be 3 meters
- The riparian buffer should be as continuous as possible



Sample Calculation

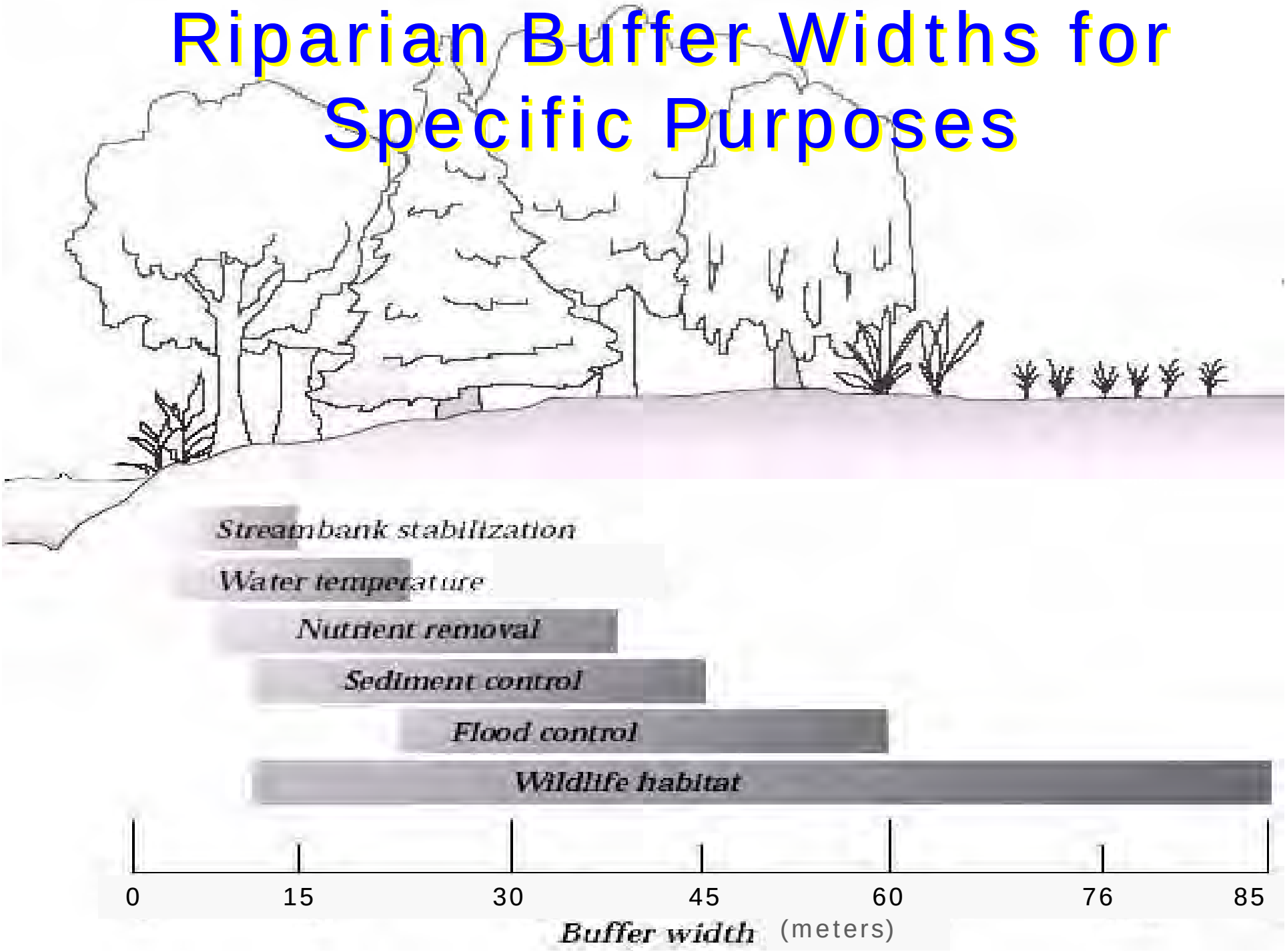
If the stream is 5 meters wide.

What should the width of the riparian buffer be?

2 x 5 = 10 meters

On both sides of the stream

Riparian Buffer Widths for Specific Purposes



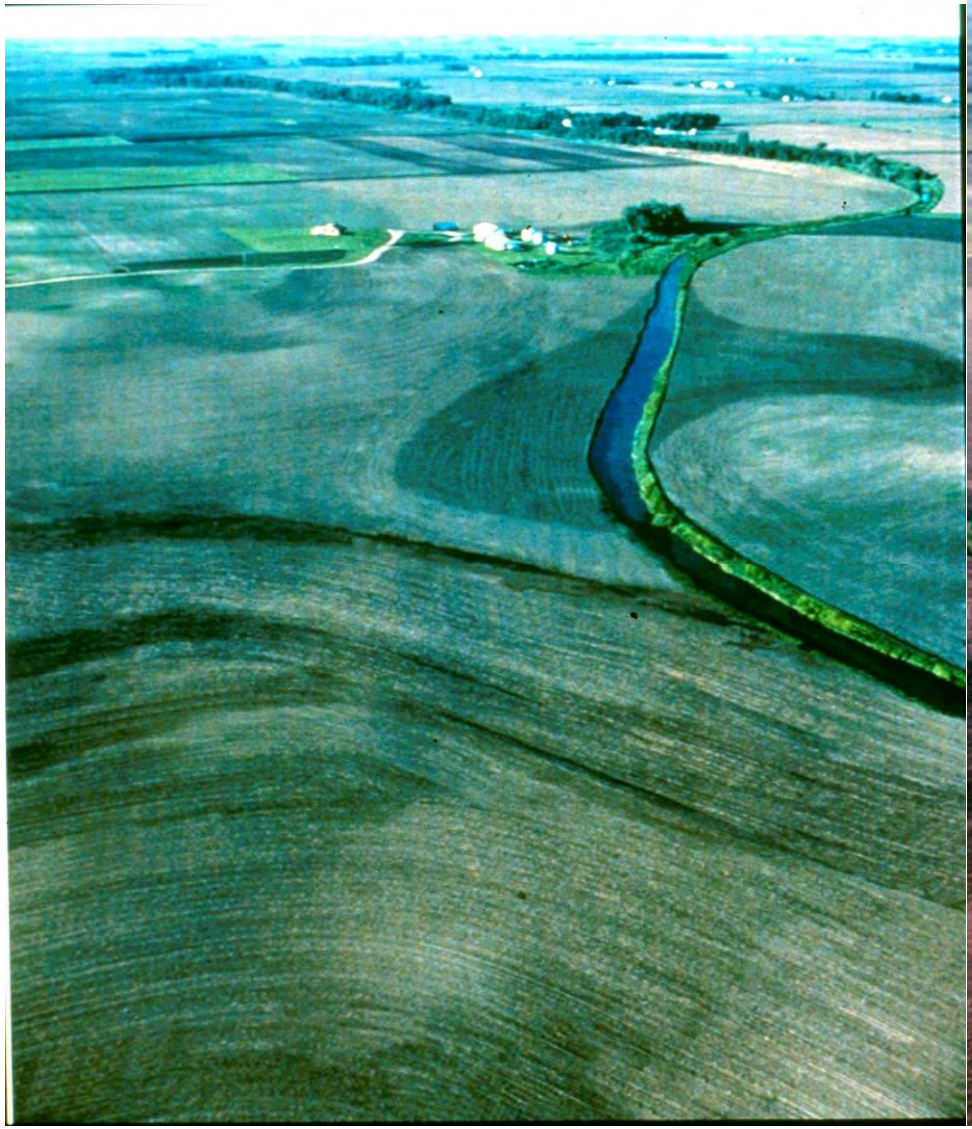
Test Time

What is wrong with this riparian buffer?


Test Time
What is wrong with this riparian buffer?
Buffer is only on one side of the stream

Test Time

Which has the better riparian buffer?



This buffer is the best:
Both sides and wider


The End