Rainwater Management in the Blue Nile Basin: Watershed Management Research

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Challenges in Managing Nile WS

On-site:
- Nutrient and organic matter loss
- Reduced water-holding capacity caused by reduced soil depth
- Reduced agricultural productivity

Off-site:
- Sedimentation of water storage structures
- Reduced water quality due to sediment and P & N enrichment

Population pressure

Fragmentation

Poverty

Reduced productivity

Lack of appropriate technologies

Limited research capacity

Weak extension services
Function

- receives, stores, and releases water in numerous ways
- provides water supply services for economical, ecological and social purposes in required quantity and quality
- Regulates the balance between the **loss** and **storage or useful depletions** of water

Zalewski et al., 1997; Zalewski, 2009
WSM Research in NB

• A number of studies have been conducted by several stakeholders
• IWMI and its partners focused on modeling sedimentation rate
• Effect of soil loss on productivity was not given sufficient attention
• Currently
  – attempting to relate sediment loss to crop and land management practices
  – link sediment loss to crop-livestock SWP
Approaches

Collecting Data on

• Climate
• Crop and land management
• Runoff
• Sediment load
• Nutrient conc. of sediments

Will Analyze

• Impact of crop & land management on productivity and production
  • Water Productivity Modeling
  • Nutrient loss Vs Crop yield (Nutrient Response curve for different crops)

• Options to change scenario
  • Evaluate Menu of Interventions (WS level)
  • Anticipate Impact at Basin scale

Understand the systems (micro watershed and landscape)
Three watersheds selected
Key Data Gap

• Crop performance at different locations under defined management practices (key crops: maize, rice, wheat, tef, potato, millet, sorghum, barley)

• Response of these crops to different fertilizer rates