# Reducing soil loss through effective soil and water conservation practices using hydrologic considerations and farmers' participation in the Blue Nile Basin

Seifu A Tilahun, Bahir Dar University`

- Soil losses varying from 1 to over 400 tons $ha^{-1}year^{-1}$
- Blue Nile contributes 60% of the Nile flow and sediment

Photo Title: Erosion and sediment transport
Photo: Blue Nile Fall

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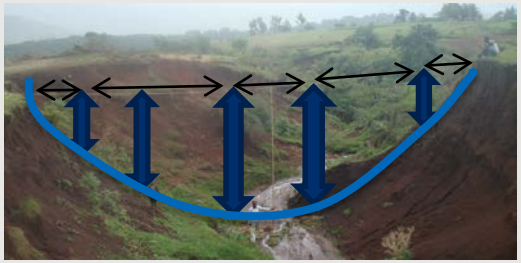
Research Approach: Farmers participation, establishing 3 experimental watersheds, collecting primary & Secondary data in 2013, 2014 and 2015

Rain gauge

Infiltration tests

Piezometer wells

Grab sediment samples



Gulley Erosion

Erosion pins

Focus group discussion

Transect walks

Composite soil sampling: N, P, K from soil and sediment

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Key results of your research/project so far:

- Landscape is changing under increased population pressure: Cultivated land replaced forest and shrub lands
- Changing landscape results in loss of organic matter and other binding agents
- Particle size became  much finer after loss of organic matter
- After forest clearing flow paths become shallower due to land degradation forming hardpans at shallow depth by clay illumination causing shorter travel times and more saturation
- To drain the excess water more gullies created in the landscape after 1970's
- However gullies viewed as punishment by God for their sin


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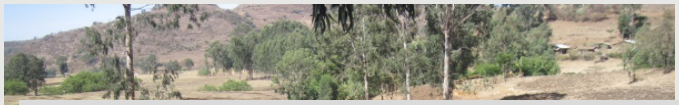
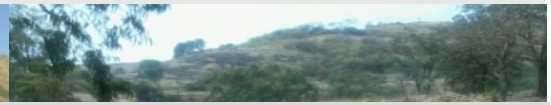
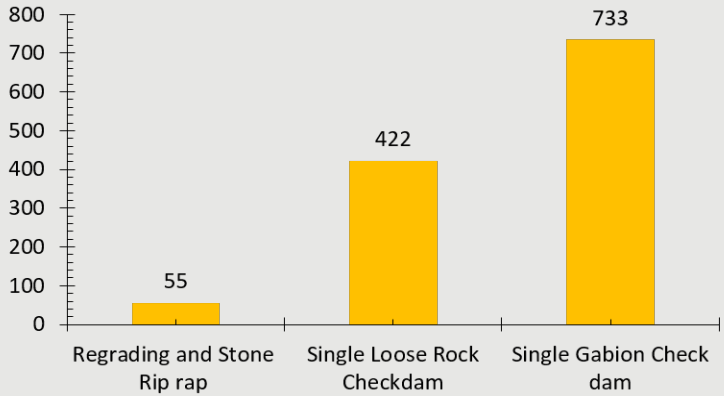




Marginal Rate of Return was 10 based on the value of increased forage production and trapped soil nutrient values.





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Treating shallow gullies is more cost effective than waiting until the gully is fully developed.

# Field visit and consultation with farmers and agricultural development agents on “Controlling severe soil erosion through gully rehabilitation”

# Field practice on gully head treatments

**From 4 zones and 11 districts , 33 farmeres, 11 development agents and 10 researchers and journalists were participated.**

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Top next steps for your project: More research is needed on how best to make break the hardpan, reverse land degradation and improve water availability during the dry phase to grow high value crops so that water productivity increased

Convincing the ministry and regional offices to give more attention to gullies than hillsides

Challenges you have faced in collecting meaningful data: failure of instruments, lab equipment with their reagents and data management

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