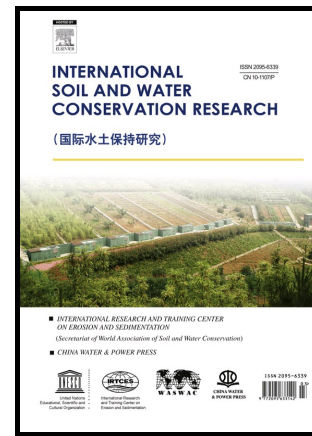


Author's Accepted Manuscript

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PII: S2095-6339(17)30205-8
DOI: <https://doi.org/10.1016/j.iswcr.2017.12.006>
Reference: ISWCR122

To appear in: *International Soil and Water Conservation Research*

Received date: 23 August 2017
Revised date: 15 December 2017
Accepted date: 27 December 2017

Cite this article as: Asnake Mekuriaw, Andreas Heinemann, Gete Zeleke and Hans Hurni, Analysis of factors determining the adoption of physical soil and water conservation practices in the Ethiopian highlands, *International Soil and Water Conservation Research*, <https://doi.org/10.1016/j.iswcr.2017.12.006>

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Analysis of factors determining the adoption of physical soil and water conservation practices in the Ethiopian highlands

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Abstract

In the Ethiopian Highlands, physical Soil and Water Conservation (SWC) structures have been constructed on cultivated land for nearly 40 years to reduce soil loss and improve crop yields and people's livelihoods. However, the success of this huge effort was mixed, and the main constraints have not been investigated in detail. This paper aimed to identify the factors determining the adoption of SWC structures in the Ethiopian Highlands. Case study areas were selected from high-potential and low-potential areas. Data were collected from 269 farmers using face-to-face interviews, and through focus group discussions, key informant interviews and field observations. Binary logistic regression model and descriptive statistics were used to analyse the data. The result showed that the majority (87%) of the farmers interviewed were using SWC structures. Regionally, nearly all farmers in the low-potential areas and 56% of farmers in the high-potential areas constructed and were maintaining the structures properly. This disparity is due to the fact that in the low-potential areas there have been strong governmental involvement and technical and financial support and hence they have more knowledge and better understanding of the multiple uses of physical SWC structures than do farmers in the high-potential areas. In addition, off-farm activities and free grazing plays a substantial role. We can conclude that clear understanding of the benefits of SWC structures by farmers, active involvement and technical support from the government, and genuine participation of farmers in SWC practices were found to be main factors in the adoption of SWC measures.

Keywords: SWC structures, Ethiopian highlands, high-potential area, low-potential area, adoption

1 Introduction

Soil is the media to produce crop, fodder, fiber and raw materials, among other functions (Bilotta et al. 2012). However, soil erosion has become a serious problem in many countries including Ethiopia (De Graaff et al. 2008). In Ethiopia, soil loss due to water erosion is very high. At the watershed level, it was found to be 25 Mg ha⁻¹ y⁻¹ (Yeshaneh et al. 2015) in northern Ethiopia, 91.6 Mg ha⁻¹ y⁻¹ in western Ethiopia (Bezuayehu Tefera and Sterk 2010), 23.4 Mg ha⁻¹ y⁻¹ in central Ethiopia (Gessesse et al. 2014), and 19.2 Mg ha⁻¹ y⁻¹ in northwestern Ethiopia (Asnake Mekuriaw 2017). Soil erosion is severe on Ethiopia's agricultural land and is affecting soil fertility and productivity – and reducing the cropland

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