Tropentag, September 17-19, 2013, Stuttgart-Hohenheim

"Agricultural development within the rural-urban continuum"

Impact of Rainwater Management Strategies on Sustainable Rural Livelihood: Evidence from Azgo Watershed, Northeast Ethiopia

Anteneh Girma[1], Menale Kassie[2], Siegfried Bauer[1], Joachim Aurbacher[1]

[1] *Justus-Liebig University Giessen, Inst. of Farm and Agribusiness Management, Germany*
[2] *International Maize and Wheat Improvement Center (CIMMYT), Kenya*

Abstract

This paper evaluated the potential use of integrated rainwater management practices on sustainable rural livelihood measured by household food security, poverty and willingness to participate in the management of watershed services. The study is based on a cross-sectional plot and farm household data collected in 2012 from a random sample of 354 household and 1011 plots in Ethiopia. The causal impact of the rainwater management is estimated using average treatment effect for the treated on crop income and measured differences in food calorie per adult equivalent, indicator based-poverty index and mean willingness to contribute labour. Propensity score matching is used to match households and plots with and without rainwater management. In addition, endogenous switching regression is utilised to estimate the true livelihood support of integrated rainwater management by controlling for the role of selection problems on production and adoption decisions. The result revealed that adoption of rainwater management practices has a significant positive impact on crop income and thereby on household food security and poverty status. The mean willingness to contribute labour for the management of the watershed service is not influenced by the prior experience of using the integrated rainwater management practices since non-users have also realised the benefits of rainwater management for watershed services. Wide spread use of the rainwater management practices were enhanced with the availability of location specific knowledge infrastructure, hard and soft institutional setup, market, and physical infrastructure. One of the innovative physical infrastructures is the use of different land management practices to collect run off and store in water harvesting ponds that allowed farmers to irrigate cash crops. The market and road network strengthened the rural-urban continuum thereby enhancing the demand for and successful use of rainwater management technologies through facilitating the input and output markets. The research calls for green water policy for sustainable intensification of smallholder agriculture by utilizing the unexploited two third of the global water resource rather than focusing on the over burden and conflicting blue water, which is only one third of the global water resource.

Keywords: Average treatment effect, food calorie intake, payment for watershed services, poverty, rainwater management

Contact Address: Anteneh Girma, Justus-Liebig University Giessen, Inst. of Farm and Agribusiness Management, Senckenberg Str. 3, 35390 Giessen, Germany, e-mail: antegirma@yahoo.com