



Rainwater harvesting for small-scale irrigation of maize in the Central Rift Valley, Ethiopia

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In the Central Rift Valley of Ethiopia, small scale farmers mostly rely on rainfall for crop production. The erratic nature of rainfall causes frequent crop failures and makes the region structurally dependent on food aid. Rainwater Harvesting (RWH) is a technique to collect and store runoff that could provide water for livestock, domestic use or small scale irrigation. Usually, such irrigation is promoted for high value crops, but in the light of regional food security it may become interesting to invest in irrigation of maize. In this research, two cemented RWH cisterns were investigated to determine their economic and social potential for supplemental irrigation of maize using drip irrigation. For this, data from test fields with irrigated maize and monitoring of water levels of the cisterns were used, as well as a survey under 30 farmers living close to the experimental site. The results show that catchment size and management should be in balance with the designed RWH system, to prevent too little runoff or flooding. An analysis with Cropwat 8.0 was used to investigate the possibility of irrigating maize with the observed amounts of water in the RWH cisterns. This would suffice for 0.3-0.8 ha of maize. For a RWH cistern with a drip irrigation system to be economically viable, the production on this acreage should become 3-4 ton/ha; 2.5 times higher than the current yield. But the biggest challenge would be to change the perception of respondents, who don't find it logical to spend precious water on a common crop like maize. Therefore, if the Ethiopian government considers the irrigation of maize to be important for regional food security, it is recommended to either subsidize the construction of RWH cisterns or provide credit on favourable terms.