



Assessment of the performance of water harvesting systems in semi-arid regions

Ralph Lasage

VU University Amsterdam, Amsterdam, Netherlands (ralph.lasage@vu.nl)

Water harvesting is widely practiced and has the potential to improve water availability for domestic and agricultural use in semi-arid regions. New funds are becoming available to stimulate the implementation of water harvesting projects, for meeting the Sustainable Development Goals and to help communities to adapt to climate change. For this, it is important to understand which factors determine the success of water harvesting techniques under different conditions. For this, we review the literature, including information on the crop yield impacts of water harvesting projects in semi-arid Africa and Asia.

Results show that large water harvesting structures (> 500 m³) are less expensive than small structures, when taking into account investment costs, storage capacity and lifetimes. We also find that water harvesting improves crop yields significantly, and that the relative impact of water harvesting on crop yields is largest in low rainfall years. We also see that the governance, technical knowledge and initial investment are more demanding for the larger structures than for smaller structures, which may affect their spontaneous adoption and long term sustainability when managed by local communities. To support the selection of appropriate techniques, we present a decision framework based on case specific characteristics. This framework can also be used when reporting and evaluating the performance of water harvesting techniques, which is up to now quite limited in peer reviewed literature.

Based on

Bouma, J., Hegde, S.E., Lasage, R., (2016). Assessing the returns to water harvesting: A meta-analysis. *Agricultural Water Management* 163, 100-109.

Lasage, R., Verburg P.H., (2015). Evaluation of small scale water harvesting techniques for semi-arid environments. *Journal of Arid Environments* 118, 48-57.