

Can Smallholder Drip Irrigation Improve Food Security at the Household Level? Evidence from Mutasa and Mutoko Districts in Zimbabwe Abstract

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Over the years, various efforts have been implemented in the hope of attaining food security, and yet there are still 795 million people who are food insecure (FAO, 2015). This begs the question: who are the food insecure? These have been identified as the vulnerable population, including the poor as well as small scale farming households. They rely mostly on farming, but have inadequate resources to grow or purchase enough food for their own consumption. Efforts to target the vulnerable population will go a long way in eradicating hunger, achieving food security and promoting sustainable, as highlighted by the Sustainable Development Goals (SDGs) of September, 2015 (UN,2015).

Extension of effective farming technologies such as drip irrigation, which have the capacity to increase food production whilst using less water, to smallholder households, present a reasonable option to improving household food security. Using data from the 2013 Smallholder Drip Irrigation survey conducted by the author in 2 districts of Zimbabwe, this research aims to establish whether the main goal of the drip irrigation project of improving household food security was attained. The survey was carried out among beneficiaries of the Smallholder Drip Irrigation Project, implemented by Plan International. Using various proxies for household food security (number of coping strategies, the coping strategies index and the dietary diversity score), the relationship between household food security and drip irrigation is explored. Other drip irrigation, food, beneficiary and household related factors are also controlled for in this study.

The results indicate that drip irrigation has the potential to improve household food security. Specifically, the results suggest that the benefits of smallholder drip irrigation in these two districts are evident in the long term, as household food security worsened for those who dropped out early (within the first 3 years of using drip irrigation). The impact was mainly evident through a reduction in the number of coping strategies a household uses. Although the project aimed at increasing food diversity in the household, the findings show that dropping out of the drip irrigation program did not have a significant effect on the dietary diversity scores.

Other factors including who decides how much of the garden produce to sell, a beneficiary's perception on how much they know about drip irrigation, the beneficiary's age and the number of household members are also important in improving household food security. Households where the male adults are the sole decision makers on how much garden produce to sell are more likely to be food insecure compared to households where adult females or spouses make the decision. This is consistent with available literature. Of interest is the result that households where the beneficiaries believe that they have below average knowledge of drip irrigation are more likely to be

food insecure compared to households where beneficiaries think they have above average knowledge in drip irrigation. The household's socioeconomic status and belonging to a farming or business related group also proved to be important for food security.