

Promote Rainwater-Harvesting to assist farmers in Nepal adapt to climate change

Farmers in Nepal face a number of weather-related challenges, including uncertain rainfall. These problems affect food security in the country. One effective response is to provide farmers with training and support to help them adopt rainwater-harvesting based irrigation. This ‘climate adaptation’ approach would not only help farmers get the water they need, but it could double the income they earn from their crops and livestock.



Rainwater Harvesting for Agriculture

Over 65 percent of Nepal’s population is directly dependent on agriculture. Uncertain rainfall makes farming risky, especially for crops, such as rice, maize, wheat and vegetables that have a reasonable market value. In this context, rainwater-harvesting (RWH) is an important strategy for farmers to store water, increase groundwater infiltration and cope with rainfall variation and drought. The Government of Nepal promotes RWH. However, only a small number of farmers have taken it up.

Rishi Ram Kattel from Nepal’s Agriculture and Forestry University looked at the potential benefits from RWH and why adoption is low. His study examines data from 282 farmers located in four mid-hill districts of the Western Development Region. Half of the farmers in the study had adopted RWH, mainly by building plastic collection ponds, while the other half was non-adopters. Farmers who use RWH cultivate high value crops such as vegetables, maize, wheat and rice.

RWH can double farm income

The study results show that adopting RWH can increase annual household income from agriculture and livestock husbandry by over 130 percent. The annual household income from these

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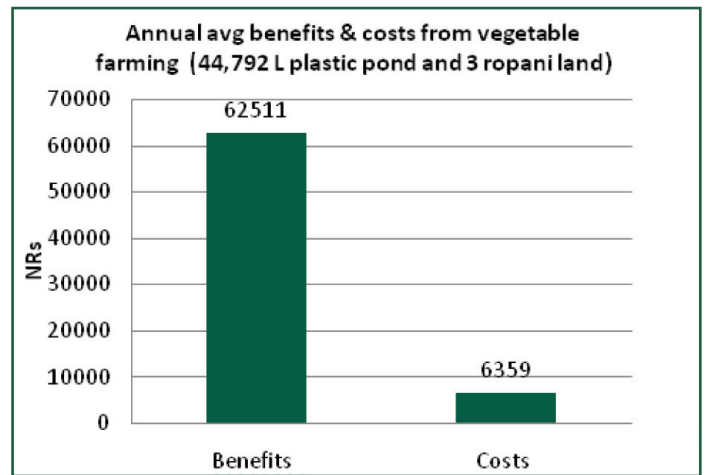
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sectors for RWH adopters was NRs. 104,969 (USD1,049). Adopters benefit from augmented irrigation water, which allows them to diversify their crops from cereals to vegetables. Further, the pay-back period for investing in a pond can be as low as two years.

RWH technology is viable for an average Nepalese hill farmer even if investment costs increase by 20 percent or benefits decrease by 20 percent.



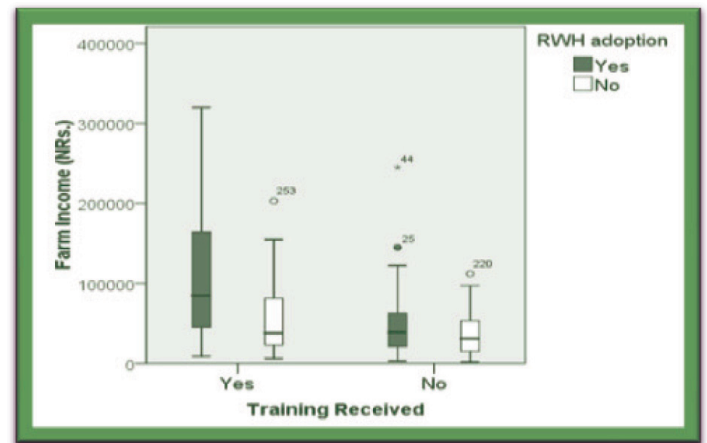
Adoption constrained by initial investments

Up-front investment costs are critical. The cost of a RWH plastic pond system is NRs. 55,000 (USD 550), which amounts to 28 percent of average annual household income. Thus, farmers who depend entirely on agriculture are more likely to adopt RWH. Further, a wealthy farmer is 19 percent more likely to adopt the technology relative to a poorer farmer. Two other constraints hinder adoption – lack of technical knowledge and limited local labor due to out-migration. Much of agriculture in Nepal is non-commercial and farmers may not want to shift from cereal farming to high value crops because of production and market risks. Thus, RWH is less beneficial to farmers who may not want to diversify their crops.

Training in farm management the way forward

Farm management training from agricultural extension services increases the probability of a farmer adopting RWH technology, on average, by 29 percent.

Indeed, if approximately 10 percent of the households in the study area are trained, then the annual public benefits per district from providing training would be approximately NRs. 130,907,710 or about 1.3 million USD, for nominal costs of training.



Farm management training increases adoption and income from rainwater harvesting.

Given the many weather-related uncertainties faced by farmers in Nepal and the potential of RWH to address them, policy makers and extension services need to play a more proactive role in promoting RWH. Provision of training should be a core element of this work.

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