



Tropentag, September 14-16, 2022, hybrid conference

“Can agroecological farming feed the world?  
Farmers’ and academia’s views”

## Impact of irrigation on rural farm household’s nutritional outcome and potential irrigation-nutrition pathways in Kenya

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### Abstract

Increasing agricultural production in sub-Saharan Africa has been a key agricultural policy intervention not only for the region’s governments but also for development partners and stakeholder involved. Irrigation has been advocated by researchers, policy makers and implementers as one of the plausible ways of increasing agricultural production in the region. With the evolving global agricultural policy arena this increase in agricultural production is aimed at addressing the regions food and nutritional insecurity and not to only increase caloric supply. However, the impact of irrigation on nutritional outcomes remain vague and largely understudied not only in the region but globally. This study undertook to study the impact of irrigation on the nutrition outcome of farm households using the Minimum Dietary Diversity for women as a proxy for nutrition. It further hypothesised that the farm households can attain their desired nutrition outcome through the income, production and women empowerment pathway and as such extended the research to looking at the impact of the irrigation on these three potential irrigation-nutritional pathways. The study utilised data from a household survey 384 smallholder agricultural households in rural Kenya in 2021. The propensity score matching technique and the endogenous switching regression were used in the analysis due to their ability to address the potential endogeneity and selection bias of irrigating farmers. The results show that irrigation increases the dietary diversity of irrigating farmers by 0.43 points. On the three potential irrigation-nutrition pathways, the results indicate that irrigating farmers had a higher farm income of \$1,006.39, a lower production diversity of 0.39 points and there was no significance difference in women empowerment between irrigating and non-irrigating farmers. From the results we make a conclusion that irrigation does impact on nutritional outcomes of smallholder farmers. Nonetheless, there is a need for further analysis into the irrigation-nutrition impact pathways as the three potential impact pathways (income, farm production and women empowerment) have different impact effects.

**Keywords:** Endogenous switching regression, irrigation, Kenya, nutrition, nutrition pathway, propensity score matching technique