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Adoption and Dis-Adoption of Sustainable Agriculture: A Case of Farmers' innovation and IPM Technologies for Suppressing Fruit Flies in the Kenyan Mango Farming Systems

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Abstract

The invasive fruit fly *Bactrocera dorsalis* poses a major threat to the production and trade of mango in sub-Saharan Africa. The loss of market opportunities due to stringent phytosanitary measures makes the livelihoods of many small scale farmers who dominate the mango sub-sector vulnerable. In attempt to minimise the yield losses and production costs while maximising revenues, farmers devise different innovations to manage the pest challenges at the farm level. Most of these innovations guide research and development of modern bio-technologies. Using multi stage sampling technique, two sub counties in Embu county, Kenya were selected where mango is a predominant economically important fruit crop. Household survey data was collected after 2019 mango season. Our study tracked farmers' innovations in the management of the invasive fruit fly, analysed farmers' knowledge, perception and practices on the management of *Bactrocera dorsalis* and determinants of adoption and dis-adoption decisions on sustainable pest management strategies. Results reveal that farmers consider fruit flies as the major threat to the productivity of the mango sub-sector (98.8%) and hence depend heavily on pesticides (89.7%). Some farmers (34.6%) use indigenous methods to manage the pest. Though farmers possess good knowledge of different non-pesticides strategies, uptake is relatively low. Results from the multinomial Logistic Regression model reveal that experience in mango farming, the number of mature mango trees owned, land allocated to mango production, access, and availability of the market determines the likelihood of farmers to adopt, dis-adopt or not adopt a non-pesticide fruit fly management strategy. We recommend strengthening information exchange networks to farmers for sustainable adoption of biocontrol technologies in the management of *B. dorsalis*.

Keywords: *Bactrocera dorsalis*, farmers' innovations, Kenya, knowledge, mango