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Practices and Perceptions of Pesticide Use in Tropical Wetlands: An Assessment from the Nyabarongo Lower Catchment in Kigali, Rwanda

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Abstract

The use of pesticides in tropical wetlands is important to ensure the availability of vegetables throughout the year. This is particular the case for the valley bottom wetlands in high altitudes, overpopulated countries such as Rwanda, where this is strongly promoted by the government. However, the potential negative effects allied to farmer's perception, which influence pesticides handling and use are often neglected in policy making due to nearly non-existing research on the topic. This study aimed in-field identification of pesticides used; how they are used, unhealthy behaviour associated with pesticide in order to inform decision makers. A multi-level data collection which included deep interviews with district agronomists (n=20), smallholder farmers (n=40) covering vegetables farming plots (n=165) was conducted during July and August 2016 and 2017, and October to November 2017. The study revealed that majority of farmers poorly uses insecticides and fungicides. 73 % of respondent reported a complete lack of pesticides education; this is reflected in unhealthy behaviours that include pesticides mixing and the wash of empty containers and equipment with wetland water (80 %). Furthermore, even though the application rates were always lower than rates recommended on labels, the intensity of application was two to three times higher than the recommended intensity. The high frequent use was influenced by factors such as weather variability, habitual behaviour such as saving field from upcoming pests rather than following indications on labels, farm size or intended crops. The results call for urgent integration of farmer's education in the pesticides policies, followed by regular evaluation of farmer's perception toward pesticides. This study contributed to monitoring pesticide residues in water and soil as a part of a broader PhD research project on anthropogenic disturbances and effects of agrochemicals on environmental quality in major wetlands of Rwanda.

Keywords: Farmers perceptions, pesticide use, pesticides, wetland