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Determinants of inappropriate phytosanitary practices in off-season irrigation in the Goulbi Maradi valley, Niger

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Abstract

In sub-Saharan Africa, rising food demand requires increased agricultural production, which in turn means greater use of pesticides. It should be noted that inappropriate phytosanitary practices linked to overdosing, non-compliance with treatment frequency, preharvest intervals or failure to wear Personal Protective Equipment (PPE) can have negative impacts on the environment and human health. The aim of this study is to analyse the determinants of inappropriate phytosanitary practices by producers of off-season irrigation in the Goulbi Maradi valley in Niger. A survey was carried out in the rural communes of Djiratawa, Maradi 3 and Tibiri among 692 irrigators aged between 16 and 83 on the inappropriate use of pesticides by producers (non-compliance with prescribed doses, preharvest intervals, recommended treatment frequencies or failure to wear PPE). To this end, an econometric binary logistic regression model was designed to identify the explanatory factors of producers' inappropriate phytosanitary practices on the basis of odds ratios employed through SPSS 25.0. The results show that the rate of inappropriate pesticide use by producers reached 77.9 %. Further, this study shows that age, irrigation experience, training in pesticide use and the level of education of producers are the parameters that significantly influence the unsuitable phytosanitary practices of growers in the Goulbi Maradi valley (each p 0.0001). As such, they are decisive factors for good pesticide management in this area. Given that irrigation with pesticide application is nowadays a pillar for achieving food self-sufficiency, similar studies are needed to clarify the factors influencing inappropriate phytosanitary practices by producers in other wetlands of the country. However, the use of natural products and the promotion of integrated pest management should be preferred to minimise environmental contamination and thus health risk.

Keywords: Environmental contamination, food security, irrigation, pesticides, producers

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