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“Development on the margin”

At the Edge of Farmers' Health? Pesticide Use in Intensive Vegetable Production in Three Indian States

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Abstract

Risks related to the use of pesticides are known and pose a threat to the natural resource base and to the health of users. This study examined pesticide poisoning among 290 cabbage and cauliflower growers in three Indian states to identify factors that influence the occurrence of poisoning incidents. Multinomial logistic regression models were developed to reveal the factors influencing the number of signs and symptoms caused by pesticide exposure and those influencing the spillage of pesticides on the body. About 23 % of respondents reported one to three signs and symptoms of mild to moderate poisoning, and 44 % experienced four to twelve signs and symptoms. Forty percent used extremely hazardous and highly toxic pesticides, 28 % indicated applying more than the recommended dose, and almost 70 % spilled pesticide on their bodies. The multinomial logistic regression models had good fits and were able to correctly predict between 61 % and 77 % of the cases. Results showed that ‘farmers’ risk awareness’, ‘location’, and ‘pesticide spillage’ significantly influenced the number of signs and symptoms experienced. ‘Risk awareness’ was found to be a result of previous poisoning experience rather than a precondition for careful handling. Excluding the variables ‘location’ and ‘pesticide spillage’ revealed the significance of the ‘application frequency’, ‘farmers’ risk awareness’, and ‘whether farmers applied pesticides on their own’. ‘Whether farmers applied pesticides on their own or not’, ‘location’ and ‘application frequency’ had a significant influence on pesticide spillage. It is alarming that farmers seem to develop increased risk awareness through trial and error, and often experience negative side effects from this learning method. Any extension approach should therefore emphasise information on negative health effects to increase farmers’ risk awareness and note the need to follow correct dosages and appropriate application intervals. The latter two points deserve the attention of research from an ecological and economic point of view to quantify the damage caused to the environment as well as the loss small-scale farmers incur annually through the overuse of pesticides in vegetable production in India.

Keywords: *Brassica*, multinomial logistic regression, pesticide hazard, poisoning