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Do Farmers Adopt IPM for Health Reasons? — The Case of Nicaraguan Vegetable Growers

HILDEGARD GARMING, HERMANN WAIBEL

Leibniz Universität Hannover, Development and Agricultural Economics, Germany

Abstract

Integrated Pest Management (IPM) has been promoted in developing countries because it is considered to increase productivity in a sustainable and environmentally friendly way. Ideally, the use of non-chemical methods of pest control allows farmers to reduce pesticide use, leading to a reduction in health risks from pesticides. This health benefit could provide a major incentive for farmers to adopt IPM, given that they are aware of pesticide health effects and that the substitution of pesticides can be achieved.

This paper investigates the role of farmers' perceptions of health risks of pesticides in the adoption of IPM practices among small-scale vegetable farmers in Nicaragua.

Recognizing that health effects depend on changes in pesticide use, we account for two phases of the adoption process. During the experimentation phase, farmers observe the effectiveness of the IPM practices and whether pesticide use can be reduced. Then, based on these experiences, they decide to adopt or not.

For the experimentation phase, a Poisson regression model is used, modelling the number of practices tested by the farmer as a function of perceptions of health risks of pesticides and socio-economic farmer characteristics. The substitution effect of different IPM practices on pesticide use is then analysed in a log-linear regression model.

The results show that perceptions about pesticide health risks like e.g. prior experience of pesticide poisoning are determinants in the farmers' decision to test IPM practices. Also, training and knowledge in IPM and school education increase the number of practices tested. However, it is shown that the use of IPM practices does not substitute for pesticide use, nor do farmers shift towards less toxic products.

It is concluded, that farmers' perceptions of pesticide health risks are a motivation to experiment with IPM practices. However, the options currently available to small-scale vegetable farmers in Nicaragua are still insufficient and not effective in substituting for pesticides, or farmers are lacking information about how to use these methods effectively. Two strategies to reduce pesticide poisoning are proposed: further research on non-chemical pest control in vegetables and continued farmer training in the effective application of existing non-chemical pest control practices.

Keywords: Adoption of IPM, count model, pesticide health effects